Vol. 889 Number 1

OFFICIAL GAZETTE

of the UNITED STATES PATENT OFFICE

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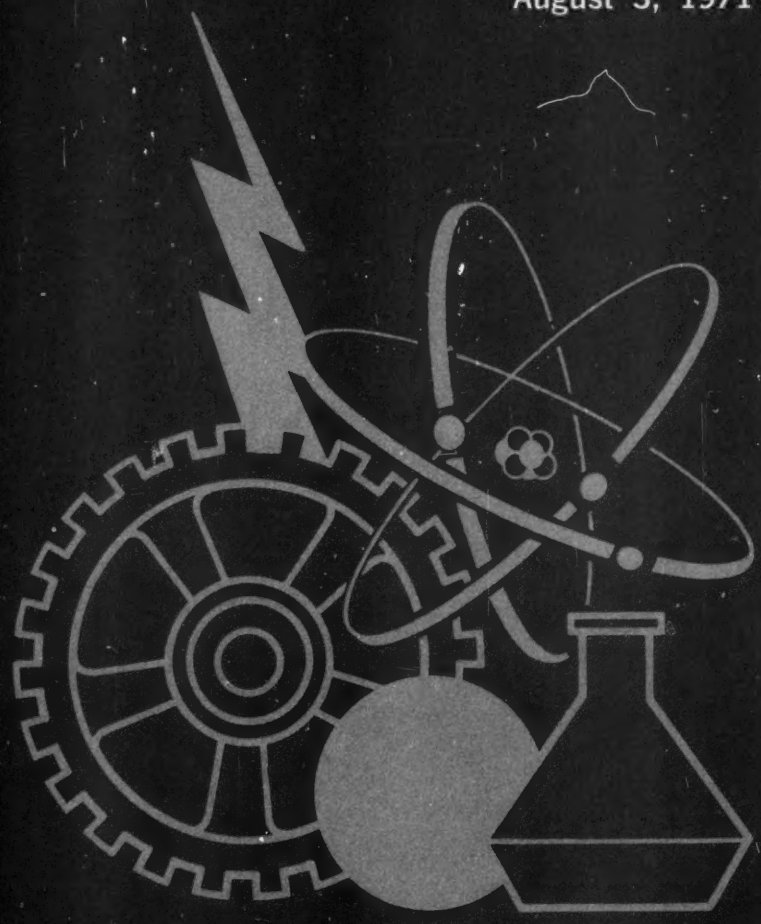
PATENTS

August 3, 1971



U. S. DEPARTMENT OF COMMERCE

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

August 3, 1971 Volume 889 Number 1

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PATENT OFFICE NOTICES

PREFACE TO THE TRADEMARK O.G. NOTICES

In September 1970, a Public Advisory Committee for Trademark Affairs was established by the Secretary of Commerce. The Purpose of this Committee was to advise the Patent Office on ways to increase the efficiency and effectiveness of the administration of the Trademark Act. A report of this Advisory Committee has been received by the Commissioner of Patents. After reviewing the recommendations, although the review is not complete, it has been decided to make certain changes in trademark practice and procedure, and to propose changes in the rules of practice. Beginning with this issue of the OFFICIAL GAZETTE and in subsequent issues as needed, announcements will be published concerning changes in procedures and proposed amendments to the Trademark Rules of Practice.

Identification of Goods and Services in Trademark Applications

Effective immediately, the Alphabetical List of Goods and Services which appears in the volume entitled "International Classification of Goods and Services to Which Trade Marks Are Applied" (published by the World Intellectual Property Organization (WIPO) is adopted as a general guideline for determining the degree of particularity of identification of goods and services required in trademark applications.

Terms which appear in the International Classification listing will generally be accepted as proper identifications of goods and services. The use in the listing of more specific identifications indented below the heading term does not necessarily preclude acceptability of that heading. For example, the International Classification lists, as Item A407, *Ammunition,* followed by specific types of ammunition, as Items A408 and A409 and A410. "Ammunition" will be accepted as an identification in accordance with *In re Dynamit Nobel AG,* 169 USPQ 499 (TTAB, 1971). However, if the more specific term is used whenever appropriate, prosecution of the application may be shortened since the possibility of a requirement of greater particularity (see below) is reduced.

Greater particularity than is set forth by the terms in the International Classification listing may not be required by the Examiner in the absence of a clear need therefor. Typical illustrations of clear need can be found in the following situations:

(1) The broad term includes items which are classified in more than one class. (For example, "artists' materials.")

(2) The broad term is too indefinite for proper examination. (For example, "metallic parts.")

(3)(*a*) The identification is inconsistent with the goods or services disclosed by the specimens.

(*b*) The ordinary meaning of the identification is at variance with the goods or services disclosed by the specimens or the record. (For example, "decalcomanias" are not adequately identified by the term "publications." See also *Ex parte Consulting Publishing Co.,* 115, USPQ 240.)

(4) Wording included in the mark requires limitation of the identification. (For example, "beer" may not be included in the identification where the mark is "Newark 'Olde Town' Ale" (*Ex parte Consumers Brewing Co.,* 55 USPQ 426).)

On the other hand, some situations do *not* constitute clear need, as illustrated by the following:

(1) The existence of a decision holding that a likelihood of confusion exists in relation to items which are narrowly identified does not in itself constitute a clear need to require amendment of a broad identification to the more specific items mentioned in the decision.

(2) If the identification is understood when read in association with the title of the class in which it is placed and is otherwise satisfactory, further qualifying amendment should not be required. (For example, "mufflers" in the clothing class would not require further modification to indicate that articles of clothing are intended; similarly the term "house organ" in the class for printed publications would not need further qualification.)

In a few instances, the terminology in the International Classification of Goods and Services is not in common usage in the United States. Where this occurs, the term more commonly used in this country should be selected.

The English edition of the "International Classification of Goods and Services to Which Trade Marks Are Applied" can be ordered from:

Sales Branch, The Patent Office
Block C. Station Square House,
St. Mary Cray, Orpington, Kent, England

Certain modifications and additions to the Classification have been published as supplements and are also available from the British Office.

We have been advised by the British Patent Office that the best methods of payment are:

(*a*) By International Money Order or by Banker's draft payable in Sterling and drawn on a British bank or,

(*b*) By ordinary check drawn on an American bank in dollars and payable to the Comptroller-General, Patent Office.

Orders for the International Classification and for the Supplements can be made by method (*a*) or (*b*) and should be accompanied by remittance in the following amount(s):

(*a*) If paid by International Money Order or by Banker's draft:

International Classification --	10 shillings	($1.20 per copy)
Nov. 15, 1967 supplement ---	1 shilling	(12¢ per copy)
Mar. 18, 1970 supplement ----	(free)	
Mar. 3, 1971 supplement ----	2 shillings	(24¢ per copy)
Total Cost (including postage by surface mail) --	13 shillings	($1.56)

(*b*) If paid by ordinary check:

International Classification ----------	$1.45
Nov. 15, 1967 supplement ----------	.15
Mar. 18, 1970 supplement ----------	(free)
Mar. 3, 1971 supplement ----------	.30
Total Cost (including postage by surface mail) --	$1.90

WILLIAM E SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

Recording of Documents Affecting Title

The Patent Office is liberalizing its policy concerning the recording of documents, other than assignments, which affect title to trademark registrations and applications. Under Rule 2.185 of the Trademark Rules of Practice, instruments affecting title to a trademark registration or application, and licenses of trademarks which are the subject of trademark registrations or applications, will be recorded even though the recording thereof may not serve as constructive notice under Section 10 of the Trademark Act of 1946, as amended (15 U.S.C. 1060).

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13231; July 16, 1971

Termination of Advancement of Trademark Applications for Examination

The practice of expediting the prosecution of certain new trademark applications as set forth in the notice of March 23, 1966 (825 O.G. TM 54, 104 and 148) entitled "Advancement of Trademark Applications for Examination," is rescinded effective August 1, 1971.

Pending applications in which a request for accelerated prosecution is filed prior to August 1, 1971, will continue to be expedited in accordance with the notice of March 23, 1966.

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13231; July 16, 1971

Request for Extension of Time in Which to Oppose

The Patent Office is adopting a new procedure to be used when filing a request for an extension of time in which to oppose under Section 13 of the Trademark Act and Rule 2.102, Trademark Rules of Practice. All requests for extension of time should be submitted in triplicate. The Patent Office will stamp each copy of the request with the action taken and send a copy to the requester and the applicant. The third copy will be entered in the file.

The purpose of this new procedure is to expedite the handling of extensions of time by eliminating the preparation of a formal notice of the disposition of the request. Further, this procedure will provide the applicant with additional information concerning the potential opposition.

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 3—FORMS FOR PATENT CASES

Division-Continuation Program

The current Rule 147 divisional practice and the "streamlined continuation" program set forth in the notices of February 11, 1966 (824 O.G. 1); May 13, 1966 (827 O.G. 2); May 31, 1966 (828 O.G. 1085) and October 14, 1969 (869 O.G. 1) are superseded by this change in the rules.

The practice under § 1.60 permits persons having authority to prosecute the prior application to file a continuation or divisional application without an oath or declaration, if the continuation or divisional application is a copy of the prior application as filed. However, some of the claims in the prior application as filed may be canceled by amendment in order to reduce the filing fee. An amendment presenting additional claims may accompany the request for filing an application under § 1.60 but such amendment will not be entered until after the filing date has been granted.

Form 3.54 is designed as an aid for use by both applicant and the Patent Office and should simplify filing and processing of applications under § 1.60.

Application copies may be prepared and submitted by the applicant, his attorney or agent, provided they are verified as true copies. No charges will be made for preparation of copies that are retained by the Office.

Notice of proposed rule making regarding a revision of §§ 1.41 and 1.75, an addition of §§ 1.60 and 3.54 and revocation of § 1.147 of Title 37, Code of Federal Regulations, Relating to a division-continuation program, was published in the Federal Register of January 28, 1971 (36 F.R. 1357).

Interested persons were given an opportunity to participate in the rule making process through submission of comments in writing and at an oral hearing held on March 23, 1971.

Full consideration has been given to the comments received and changes in the text of the original proposal have been made in view thereof.

In consideration of the foregoing and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Parts 1 and 3 of Chapter I of Title 37 of the Code of Federal Regulations are hereby amended as follows:

1. In § 1.41, paragraph (a) is revised to read as follows:

§ 1.41 *Applicant for patent.*

(a) A patent must be applied for and the application papers must be signed and the necessary oath or declaration executed by the actual inventor in all cases, except as provided by §§ 1.42, 1.43, and 1.47. (See § 1.60.)

* * * * * * *

2. A new § 1.60 is added to read as follows:

§ 1.60 *Continuing application for invention disclosed and claimed in a prior application.*

A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application. If the application papers comprise a copy of the prior application as filed, signing and execution by the applicant may be omitted provided the copy either is prepared and certified by the Patent Office or is prepared by the applicant and verified by an affidavit or declaration by the applicant, his attorney or agent, stating that it is a true copy of the prior application as filed. Certification may be omitted if the copy is prepared by and does not leave the custody of the Patent Office. Only amendments reducing the number of claims or adding a reference to the prior application (§ 1.78(a)) will be entered before calculating the filing fee and granting of the filing date.

3. In § 1.75, paragraph (d)(2) is revised to read as follows:

§ 1.75 *Claim(s).*

* * * * * * *

(d) * * *

(2) See §§ 1.141 to 1.146 as to claiming different inventions in one application.

* * * * * * *

§ 1.47 [*Revoked*]

4. Section 1.147 is revoked.

5. Section 3.54 is added to read as follows:

§ 3.54 *Division-continuation program application transmittal form.*

IN THE UNITED STATES PATENT OFFICE

Docket No._____

THE COMMISSIONER OF PATENTS,
Washington, D.C. 20231.

SIR: This is a request for filing a

☐ Continuation

application under 37 CFR 1.60,

☐ Divisional

of pending prior application Serial No. _____ filed on _____ of _____
(date) (inventor)

for _____
(title of invention)

1. ☐ Enclosed is a copy of the prior application as originally filed and an affidavit or declaration verifying it as a true copy.
2. ☐ Prepare a copy of the prior application.
3. ☐ The filing fee is calculated below:

CLAIMS AS FILED, LESS ANY CLAIMS CANCELED BY AMENDMENT

For	Number filed	Number extra	Rate	Basic fee $65
Total claims	−10=	×	$2 =	
Independent claims	−1=	×	10 =	
Total filing fee				

4. ☐ The Commissioner is hereby authorized to charge any fees which may be required, or to credit any overpayment to Account No. _____. A duplicate copy of this sheet is enclosed.
5. ☐ A check in the amount of $_____ is enclosed.
6. ☐ Cancel claims _____.
7. ☐ Amend the specification by inserting before the first line the sentence: —This is a ☐ continuation, ☐ division, of application Serial No. _____, filed _____.—
8. ☐ Transfer the drawings from the prior application to this application and abandon said prior application as of the filing date accorded this application. A duplicate copy of this sheet is enclosed for filing in the prior application file.

9. ☐ The prior application is assigned to _____
10. ☐ The power of attorney in the prior application is to _____
(name, reg. No., and address)
a. ☐ The power appears in the original papers of the prior application.
b. ☐ Since the power does not appear in the original papers, a copy of the power in the prior application is enclosed.
c. ☐ Recognize as associate attorney and address all future communications to _____
(name, reg. No., and address)
_____
(Signature)
☐ Inventor(s)
☐ Assignee of Complete Interest
☐ Attorney or agent of record in prior application

Effective date. These amendments shall become effective on September 1, 1971, and will apply to applications filed after that date.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: June 29, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-9484 Filed 7-2-71; 8:51 am]

Published in 36 F.R. 12689; July 3, 1971

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,581,275, F. C. Mock, FUEL FEED RESPONSIVE TO AIR PRESSURE AND TEMPERATURE, FUEL FLOW, AND SPEED FOR GAS TURBINES; **2,720,751,** W. J. Kunz, Jr., FUEL SCHEDULING CONTROL SYSTEM FOR GAS TURBINE ENGINES, **filed** Mar. 5, 1971, U.S. Ct. of Cl. (District of Columbia), Doc. 78-71, *The Bendix Corporation* v. *The United States of America.*

2,584,051, M. Rose, BUTTONHOLE FORMING DEVICE, **filed** Mar. 15, 1968, D.C., S.D. Tex. (Houston), Doc. 68-H-233, *Marie Rose* v. *F. W. Woolworth Company, and Mite Corporation.* Joint motion for non-suit and to dismiss, with prejudice, Apr. 6, 1971.

2,596,063, J. W. Anderson, WINDSHIELD WIPER BLADE LINKAGE ASSEMBLY, **filed** Mar. 26, 1953, D.C., W.D.N.Y. (Buffalo), Doc. C-5677, *Anderson Co. and Productive Inventions, Inc.* v. *Trico Products Corp.* Order withdrawing decision of Dec. 31, 1964, dismissing complaints and counterclaims. Previous report submitted on Dec. 31, 1964 pertained to first cause of action re antitrust. This report relates to patent infringement, Apr. 12, 1971.

2,690,518, Fyler and Rowe, COLOR PICTURE TUBE, **filed** Mar. 1, 1971, D.C. Mass. (Boston), Doc. 71-510-C, *Columbia Broadcasting System, Inc.* v. *Philco-Ford Corporation and Philco Distributors, Inc.* **Same, filed** Mar. 15, 1971, D.C. Mass. (Boston), Doc. 71-621-C, *Columbia Broadcasting System, Inc.* v. *General Electric Company.* **Same, filed** Mar. 15, 1971, D.C., N.D.N.Y. (Utica), Doc. 71-CV-118, *General Electric Company* v. *Columbia Broadcasting System, Inc.* **Same, filed** Mar. 15, 1971, D.C., N.D.N.Y. (Utica), Doc. 71-CV-119, *General Electric Company* v. *Columbia Broadcasting System, Inc.* **Same, filed** Mar. 18, 1971, D.C. Mass. (Boston), Doc. CA-71-650, *Columbia Broadcasting System, Inc.* v. *Westinghouse Electric Corporation.* **Same, filed** Mar. 19, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c687, *Columbia Broadcasting System, Inc.* v. *Zenith Radio Corp. and Rauland Corporation.*

2,691,972, Stump and Helm, LIQUID COOLER FOR INTERNAL COMBUSTION ENGINE, **filed** Feb. 26, 1971, D.C., S.D. Ind. (Indianapolis), Doc. IP71-C-111, *Daimler-Benz Aktiengesellschaft* v. *Cummins Engine Company, Inc.*

2,720,751. (See 2,581,275.)

2,736,880, J. W. Forrester, MULTI-COORDINATE DIGITAL INFORMATION STORAGE DEVICE, **filed** Dec. 30, 1970, D.C. Mass. (Boston), Doc. 70-2001-F, *Massachusetts Institute of Technology* v. *Electronic Memories & Magnetics Corporation.* **Same, filed** Jan. 5, 1971, D.C. Mass. (Boston), Doc. 71-30-F, *Massachusetts Institute of Technology* v. *Ampex Corporation.*

2,761,177, B. Walters, MANUFACTURE OF ORNAMENTAL AND DISPLAY PLASTIC SHEETS, **filed** Aug. 21, 1968, D.C.N.J. (Newark), Doc. 839-68, *Ben Walters* v. *Innoplast Corporation, Hy Fuchs, John Doe 1-5, and Richard Roe 1-5, doing business as Things Beautiful.* Consent judgment for permanent injunction as to Innoplast Corp. and Hy Fuchs; dismissing complaint as to remaining defendants, Feb. 22, 1971.

2,773,119, L. W. Parker, TUNING SYSTEM FOR RADIO AND TELEVISION RECEIVERS, **filed** Mar. 4, 1971, D.C., S.D. Fla. (Miami), Doc. 71-338-C-CA, *Louis W. Parker* v. *Westinghouse Electric Corp.*

2,804,935, A. J. L. Hutchinson, VAPOR-LIQUID CONTACTING APPARATUS; **2,804,940,** same, PROCESS FOR DEHYDRATING GAS; **2,804,941,** same, VAPOR-LIQUID CONTACTING METHOD, **filed** Apr. 10, 1968, N.D. Okla., No. 68-C-88, transferred to Kansas (Wichita), Doc. W-4137, *Maloney-Crawford Tank Corp. and The Fish Investment Corp.* v. *Sauder Tank Company, Inc.* Judgment, claims 1, 2, 3, 5, and 6 of 2,804,940 are invalid and not infringed by defendant. Claims 1 and 3 of 2,804,935 and claims 1 and 15 of 2,804,941 are valid and infringed by defendant, Feb. 16, 1971.

2,804,940. (See 2,804,935.)

2,804,941. (See 2,804,935.)

2,828,449, I. L. Kerper, SAFETY FEATURE FOR ELECTRIC WATER-TIGHT DOOR SYSTEMS, **filed** Mar. 4, 1971, D.C., S.D.N.Y., Doc. 71-957, *Irving L. Kerper* v. *Grace Line et al.*

2,845,847, Blatt and Jatcko, HOLDDOWN CLAMP, **filed** Feb. 19, 1971, D.C., E.D. Mich. (Detroit), Doc. 36076, *ISI Mfg., Inc., Leland F. Blatt and Jos. M. Jatcko* v. *De-Sta-Co Division, Dover Corp.*

2,944,639, W. T. Blake, SHOCK ABSORBER WITH VACUUM COMPENSATOR; **2,944,681,** same, RAILWAY DRAFT APPLIANCE, **filed** Dec. 16, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c3153, *Halliburton Company and William T. Blake* v. *Keystone Industries, Inc., formerly known as Keystone Railway Equipment Company, Inc.*

2,944,681. (See 2,944,639.)

2,962,709, L. Michels, SELECTIVELY OPERABLE STROBE MARKING CIRCUIT; **2,975,413,** Landee, Deen, Fling, Shaw, Davis, Johnston and Bennett, SIMPLIFIED GROUND CONTROLLED APPROACH SYSTEM INCLUDING ADAPTATIONS FOR SURVEILLANCE, PRECISION APPROACH, TAXI AND HEIGHT FINDING; **2,976,521,** T. J. Johnson, PERIODIC REFERENCE SIGNAL MODULATION METHOD AND APPARATUS FOR REPRESENTING THE POSITION OF A DEVICE; **3,026,517,** Nameth and Stein, RADAR SCANNING SYSTEM, **filed** Jan. 27, 1969, U.S. Ct. of Cl. (District of Columbia), Doc. 46-69, *ITT Gilfillan, Inc.* v. *The United States.* Petition dismissed pursuant to Rule 102(a)(i)(iii), Mar. 1, 1971.

2,971,259, Hahnau and O'Toole, METHOD AND APPARATUS FOR DETERMINING THE POSITION OF SEWER LEAKS; **3,168,909,** Zurbrigen and Steinsberger, METHOD FOR LOCATING AND SEALING PIPE LEAKS, **filed** May 20, 1970, D.C., S.D. Fla. (Miami), Doc. 70-710-C-CF, *The Penetryn System* v. *Westwook Lake, Inc. and Fitzgerald Engineering Co., Inc.* Order of dismissal previously entered Sept. 9, 1970 is hereby vacated and this action reinstated. Motion of the third-party defendant for leave to file an amended answer and to file a counterclaim is hereby granted, Dec. 2, 1970.

2,975,413. (See 2,962,709.)

2,976,521. (See 2,962,709.)

3,026,517. (See 2,962,709.)

3,036,642, O. D. Twist, FAN; **D. 187,272,** same, **filed** Dec. 22, 1970, D.C., W.D. Wash. (Tacoma), Doc. 4220, *Flex-A-Lite Corporation* v. *Hurricane Automotive Products.* Decree that defendants are guilty of infringement; enjoined from further infringement, Feb. 3, 1971.

3,119,691, Ludington, Schara and Mohlie, NOVEL FARINACEOUS ANIMAL FOOD, **filed** Apr. 2, 1968, D.C., N.D. Ill. (Chicago), Doc. 68c593, *General Foods Corp.* v. *Carnation Company.* Order dated Sept. 23, 1968 is vacated and that the cause hereby is dismissed without prejudice, Sept. 1, 1970.

3,168,909. (See 2,971,259.)

3,404,334, C. L. Marshall, COLOR TELEVISION TEST APPARATUS; **3,539,720,** same, PORTABLE TEST APPARATUS FOR COLOR TELEVISION; **D. 209,140,** same, PORTABLE KINESCOPE JIG FOR TESTING TELEVISION TUBES, **filed** Mar. 15, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71–C–283, *Cecil L. Marshall* v. *Telematic-U.X.L. Corp.*

3,539,720, C. L. Marshall, PORTABLE TEST APPARATUS FOR COLOR TELEVISION, **filed** Jan. 11, 1971, D.C., S.D. Ind. (Indianapolis), Doc. IP71–C–22, *Cecil L. Marshall* v. *Radio Corporation of America.*

3,539,720. (See 3,404,334.)

D. 187,272. (See 3,036,642.)

D. 209,140. (See 3,404,334.)

Certificates of Correction for the week of Aug. 3, 1971

3,284,529	3,546,130	3,561,079	3,573,798
3,327,207	3,548,299	3,562,230	3,574,129
3,411,916	3,550,496	3,562,289	3,574,203
3,453,212	3,551,413	3,562,722	3,574,234
3,497,770	3,552,903	3,563,850	3,574,421
3,498,966	3,553,930	3,563,957	3,574,611
3,499,839	3,554,132	3,564,563	3,574,773
3,501,318	3,554,941	3,565,002	3,575,478
3,503,615	3,555,050	3,565,175	3,576,266
3,505,514	3,555,343	3,565,644	3,576,421
3,508,942	3,556,221	3,565,834	3,576,498
3,510,477	3,556,310	3,566,302	3,576,752
3,511,546	3,557,352	3,566,326	3,576,753
3,512,482	3,558,087	3,566,699	3,576,966
3,513,236	3,558,233	3,567,424	3,577,171
3,515,491	3,558,487	3,568,053	3,577,216
3,527,584	3,558,543	3,568,316	3,577,233
3,534,580	3,558,575	3,569,810	3,577,402
3,536,852	3,558,677	3,569,916	3,577,470
3,537,757	3,558,735	3,572,638	3,577,471
3,538,443	3,559,775	3,572,807	3,578,185
3,542,129	3,560,051	3,572,971	3,578,546
3,542,861	3,560,433	3,573,268	3,578,651
3,542,875	3,560,879	3,573,546	3,579,423
3,544,633	3,561,016	3,573,593	

Disclaimer

3,535,038.—*Emile Frans Stievenart,* Antwerp, and *Hugo Frans Deconinck,* Deurne-Zuid, Belgium, APPARATUS FOR EXPOSING LIGHT-SENSITIVE COPYING MATERIAL. Patent dated Oct. 20, 1970. Disclaimer filed May 24, 1971, by the assignee, *Gevaert-Agfa, N.V.*

Hereby enters this disclaimer to claims 1 to 11 of said patent.

Erratum

All references to Patent Number 3,578,244 to Lennart G. Erickson, Intermittent Sprinkler Irrigation System, appearing in the OFFICIAL GAZETTE of May 11, 1971, should be deleted inasmuch as such patent was not in fact issued.

Patents Available for Licensing or Sale

Eastman Kodak Company announces that non-exclusive licenses are available to responsible applicants under the following 26 patents.

Applications for licenses may be addressed to: The Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

3,300,156. FILM SCROLL INCLUDING AN END FASTENER.

3,315,911. TAKE-UP REEL FOR MOTION PICTURE PROJECTOR.

3,325,889. FILM PACKAGING APPARATUS AND METHOD.

3,369,896. FINAL RINSE BATH FOR COLOR PROCESS.

3,406,620. AUTOMATIC CONTROL FOR DAYLIGHT OR FLASH OPERATION OF A CAMERA.

3,408,132. PROJECTION SCREEN.

3,451,732. MOLDED ROLLER POST.

3,451,817. COMBINED FORMALDEHYDE AND BIS-BISULFITE ALDEHYDES AS HARDENERS.

3,463,409. CARTRIDGE.

3,463,411. REEL AND WEB RETAINING MEANS THEREFOR.

3,465,980. REEL AND FILM RETAINING MEANS.

3,486,710. REEL FOR CARTRIDGE LOADING MOTION PICTURE PROJECTORS.

3,491,965. CARTRIDGE AND REEL ALIGNMENT MEANS.

3,508,718. SPINDLE FOR CARTRIDGE LOADING.

3,536,276. CARTRIDGE FOR REEL OF STRIP MATERIAL.

3,537,367. PHOTOGRAPHIC APPARATUS FOR ARMING PERCUSSION-IGNITABLE FLASH UNITS.

3,544,248. SOCKET FOR MULTILAMP FLASH UNIT.

3,547,373. CARTRIDGE AND MEANS FOR LOCATING A CARTRIDGE ON A PROJECTOR OR THE LIKE.

3,550,514. ADAPTER FOR IGNITING ELECTRICALLY IGNITABLE FLASH LAMPS.

3,550,879. CINEMATOGRAPHIC CARTRIDGE PROJECTOR APPARATUS.

3,550,880. FILM STRIPPING MECHANISM.

3,552,286. FLASH CAMERA.

3,552,683. CINEMATOGRAPHIC PROJECTORS OR THE LIKE AND CARTRIDGES FOR USE THEREWITH.

3,558,028. CONTROL DEVICE FOR SELF-THREADING MOTION PICTURE PROJECTOR.

3,576,155. PHOTOGRAPHIC APPARATUS FOR USE WITH FLASH UNITS HAVING INDIVIDUAL STRIKER ELEMENTS.

3,576,156. MECHANISM FOR ACTUATING IGNITION OF PERCUSSION-IGNITABLE FLASH LAMPS.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 226 patents.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of Americas, New York, N.Y., 10036.

3,515,953. ADAPTIVE DIODE HAVING MOBILE DOPING IMPURITIES.

3,516,004. SIGNAL TRANSLATING CIRCUIT COMPRISING A PLURALITY OF IGFET AMPLIFIERS CASCADED IN DIRECT COUPLED FASHION.

3,516,066. READBACK CIRCUIT FOR INFORMATION STORAGE SYSTEMS.

3,517,114. COLOR KILLER AND AUTOMATIC CHROMA CONTROL CIRCUITS.

3,517,115. AUTOMATIC CHROMA CONTROL CIRCUIT.

3,517,119. DEVICE FOR PRODUCING LINE HALFTONE IMAGES SIMILAR TO THE IMAGES PRODUCED BY THE WOODCUT TYPE METHOD OF PRINTING.

3,517,165. ARRANGEMENT FOR HANDLING PRINTABLE CHARACTER BIT CODES.

3,517,253. VOLTAGE REGULATOR.

3,517,272. MICROWAVE CIRCUIT WITH COAXIAL PACKAGE SEMICONDUCTOR DEVICE.

3,517,596. SCREENING UNIT FOR HALF-TONE COLOR REPRODUCTION.

3,517,792. MULTIPLE FONT KEYBOARD.

3,517,994. ELECTROPHOTOGRAPHIC APPARATUS.

3,518,360. PORTABLE COLOR TELEVISION CAMERA SYSTEM.

3,518,370. MODULATION ERROR CANCELLING APPARATUS.

3,518,371. PRESET SENSITIVITY AND AMPLIFICATION CONTROL SYSTEM.

3,518,457. PUSH-PULL CURRENT SOURCE.

3,518,482. TELEVISION RECEIVER HORIZONTAL DEFLECTION OUTPUT STAGE PROTECTION CIRCUIT AND DIRECT VOLTAGE SUPPLY.

3,518,590. DEFLECTION YOKE AND APPARATUS FOR ITS FABRICATION UTILIZING A MAGNETIC RAMMING TECHNIQUE.

3,518,625. DEAD TRACK HANDLING.

3,518,627. COUPLING SYSTEM FOR ELEMENTAL PANEL ARRAY.

3,518,633. WEIGHTED TIME ACCOUNTING IN TIME SHARED COMPUTER.

3,518,640. MAGNETIC MEMORY WITH NOISE-CANCELLATION SENSE WIRING.

3,518,749. METHOD OF MAKING GUNN-EFFECT DEVICES.

3,519,324. HOLOGRAMS FOR RECONSTRUCTION OF OBJECTS OF EQUAL INTENSITY.

3,519,330. TURNOFF METHOD AND CIRCUIT FOR LIQUID CRYSTAL DISPLAY ELEMENT.

3,519,348. PHOTOMASKS FOR FABRICATION OF SEMICONDUCTOR DEVICES.

3,519,736. APPARATUS FOR PREVENTING RECEIVER RECORDING OF PARTIAL MULTIPLEXED MESSAGE TRANSMISSIONS.

3,519,737. RESONANT BANDPASS FILTER HAVING TWO UNDESIRED FREQUENCY CANCELLATION TRAPS.

3,519,741. REGULATED HIGH VOLTAGE POWER SUPPLY.

3,519,766. PUSHBUTTON MECHANISM.

3,519,866. PHOTOCONDUCTIVE PICKUP TUBE HAVING OPAQUE GOLD PATTERN ENCAPSULATED IN TIN OXIDE LAYER.

3,519,941. THRESHOLD GATE COUNTERS.

3,519,944. ANGLE MODULATION DISCRIMINATOR DETECTOR CIRCUIT.

3,519,996. RADIATION-SENSING MATRIX CIRCUIT.

3,520,051. STABILIZATION OF THIN FILM TRANSISTORS.

3,520,722. FABRICATION OF SEMICONDUCTIVE DEVICES WITH SILICON NITRIDE COATINGS.

3,520,993. SYNCHRONIZING SERVOSYSTEM WITH MEMORY MEANS.

3,521,119. RF EXCITATION PUMPING OF GAS LASERS BY MEANS OF A WAVE GUIDE AND COUPLING COILS.

3,521,128. MICROMINIATURE ELECTRICAL COMPONENT HAVING INTEGRAL INDEXING MEANS.

3,521,198. ELECTRONICALLY CONTROLLED DELAY LINE

3,521,242. COMPLEMENTARY TRANSISTOR WRITE AND NDRO FOR MEMORY CELL.

3,521,244. ELECTRICAL CIRCUIT FOR PROCESSING PERIODIC SIGNAL PULSES.

3,521,268. DATA CONVERSION AND DISPLAY APPARATUS.

3,522,443. LIMITING NETWORK.

3,522,463. ELECTRON TUBE MULTICOLOR DUAL PRESISTENCE SCREEN COMPRISING PHOSPHOR-COATED PARTICLES.

3,522,548. TEMPERATURE TRACKING OF EMITTER COUPLED DIFFERENTIAL AMPLIFIER STAGE.

3,524,976. BINARY CODED DECIMAL TO BINARY CONVERSION.

3,524,977. BINARY MULTIPLIER EMPLOYING MULTIPLE INPUT THRESHOLD GATE ADDERS.

3,520,016. APPARATUS FOR REGULATING THE LIGHT OUTPUT OF A FLASH LAMP.

3,525,051. CASCADE CONNECTED REGENERATIVE AMPLIFIERS.

3,525,055. TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR.

3,525,086. STORAGE SYSTEM EMPLOYING MAGNETIC TAPE CARTRIDGES.

3,525,613. THERMOPLASTIC DEFORMATION IMAGING PROCESS.

3,525,801. SERVICE AID FOR COLOR TELEVISION RECEIVER.

3,525,952. DUPLEXER HAVING TWO NON-RECIPROCAL PHASE SHIFTING MEANS.

3,526,836. STATISTICAL METHOD, UNDER COMPUTER CONTROL, FOR THE MANUFACTURE AND TEST OF MASS PRODUCED ARTICLES.

3,526,851. FILAMENTARY STRUCTURE INJECTION LASER HAVING A VERY NARROW ACTIVE JUNCTION.

3,527,879. COLOR IMAGE PROJECTION SYSTEM.

3,527,886. COMPOSITE TELEVISION VIDEO SWITCHING CIRCUIT.

3,528,018. BILEVEL VIDEO SIGNAL RECONSTRUCTION CIRCUIT.

3,528,020. VOLTAGE REGULATED SIGNAL TRANSLATING CIRCUIT.

3,529,294. INFORMATION SWITCHING AND STORAGE CIRCUITRY.

3,530,468. TRIANGULATION RADAR SYSTEM.

3,530,439. COMPUTER MEMORY ADDRESS GENERATOR.

3,530,445. RANDOM ACCESS MEMORY WITH QUIET DIGIT-SENSE SYSTEM.

3,531,657. INTEGRATED CIRCUIT AMPLIFIER BIASING ARRANGEMENT.

3,531,730. SIGNAL TRANSLATING STAGE.

3,530,780. PHOTOCOMPOSING APPARATUS.

3,531,779. METHOD FOR POLING BISMUTH TITANATE.

3,532,944. SEMICONDUCTOR DEVICES HAVING SOLDERED JOINTS.

3,532,983. HIGE INPUT IMPEDANCE SOLID STATE D.C. AMPLIFIER SUITABLE FOR USE IN ELECTRICAL MEASUREMENT.

3,532,897. THRESHOLD GATE CIRCUITS.

3,533,087. MEMORY EMPLOYING TRANSISTOR STORAGE CELLS.

3,532,810. DIGITAL LOGIC CIRCUIT FOR DERIVING SYNCHRONIZING SIGNALS FROM A COMPOSITE SIGNAL.

3,532,817. MAGNETIC "PEN" FOR A GRAPHIC TABLET.

3,532,813. DISPLAY CIRCUIT INCLUDING CHARGING CIRCUIT AND FAST RESET CIRCUIT.

3,533,088. CONTROL CIRCUIT FOR MEMORY.

3,532,991. SHIFT CIRCUITS INCLUDING THRESHOLD OR OTHER LOGIC GATES AND HAVING MULTIPLE-PHASE SHIFT PULSES APPLIED TO EACH STAGE.

3,532,293. MAGNETIC TAPE CASSETTE PLAYER APPARATUS.

3,534,308. SUPERCONDUCTIVE MAGNET CONSTRUCTION.

3,534,245. ELECTRICAL CIRCUIT FOR PROVIDING SUBSTANTIALLY CONSTANT CURRENT.

3,534,399. AREA NAVIGATION METHOD AND APPARATUS FOR AIRCRAFT WITH VHF OMNIRANGE (VOR) AND DISTANCE MEASURING EQUIPMENT (DME).

3,534,279. HIGH CURRENT TRANSISTOR AMPLIFIER STAGE OPERABLE WITH LOW CURRENT BIASING.

3,535,436. D.C. RESTORATION CIRCUIT WITH ARC-OVER PROTECTION.

3,534,893. DEVICE FOR GENERATION OF A SELF-ACTING FLUID BEARING.

3,535,011. METHOD OF MAKING PHOTOEMISSIVE ELECTRON TUBES.

3,535,021. POLARIZATION CONTROLLED PHOTOCHROMIC "WRITE-IN" SYSTEM.

3,535,466. HIGH EFFICIENCY SINGLE TURN MAGNETIC HEAD.

3,535,437. COLOR TELEVISION RECEIVER.

3,534,862. SEMICONDUCTOR WAFER TRANSPORTING JIG.

3,534,595. CENTRIFUGAL TESTING APPARATUS.

3,535,444. NOISE IMMUNE VIDEO CIRCUITS.

3,537,028. CONFOCAL SEMICONDUCTOR DIODE INJECTION LASER.

3,537,082. DECODER FOR SELF CLOCKING DIGITAL MAGNETIC RECORDING.

3,537,071. COUPLING SYSTEM FOR PANEL TYPE ARRAY.

3,536,039. MARKING DEVICE.

3,536,462. METHOD OF EVACUATING AND SEALING A GLASS ENVELOPE CONTAINING A PHOTOCONDUCTIVE DEVICE.

3,536,958. AMPLIFIER PROTECTION CIRCUIT.

3,536,526. METHOD FOR PREPARING CATHODES.

3,535,757. METHOD FOR MAKING CATHODE ASSEMBLY FOR ELECTRON TUBE.

3,536,858. RANDOM ACCESS OPTICAL SOUND TRACK REPRODUCER WITH AUTOMATIC GAIN CONTROLLED AMPLIFIERS RESPONSIVE TO A REFERENCE ZONE ON EACH TRACK.

3,537,029. SEMICONDUCTOR LASER PRODUCING LIGHT AT TWO WAVELENGTHS SIMULTANEOUSLY.

3,535,774. METHOD OF FABRICATING SEMICONDUCTOR DEVICES.

3,537,332. CAPSTAN AND FLYWHEEL ARRANGEMENT FOR MAGNETIC TAPE TRANSPORT.

3,537,890. CONDUCTIVE COATINGS OF TIN OXIDES.

3,538,244. IDENTIFICATION CIRCUIT FOR PHASE ALTERNATING LINE SYSTEM OPERATION OF COLOR VIDEO TAPE RECORDERS.

3,537,971. APPARATUS FOR ELECTROPLATING A RIBBON.

3,538,448. GAIN CONTROLLED AMPLIFIER.

3,538,466. TELEVISION TUNER CAST HOUSING WITH INTEGRALLY CAST TRANSMISSION LINES.

3,537,710. CARTRIDGE DEBRIS TRAP.

3,537,661. PRESSURE ROLLER CONSTRUCTION.

3,538,994. APPARATUS FOR CONVEYING TONER PARTICLES.

3,539,823. LOGIC CIRCUIT.

3,540,925. ION BOMBARDMENT OF INSULATED GATE SEMICONDUCTOR DEVICES.

3,541,235. KEYING CIRCUIT.

3,540,361. OPTICAL FIELD CORRECTION DEVICES FOR AN ELECTRONIC PHOTOCOMPOSITION SYSTEM.

3,541,440. USE IN AN AUTOMATIC TESTING SYSTEM OF A SIMULATOR AN ARTICLE BEING TESTED FOR TESTING THE TESTING SYSTEM.

3,541,462. APPARATUS FOR MEASURING LOW VOLTAGES AND CURRENTS WITH AMPLIFIERS PROTECTIVE MEANS.

3,541,247. ELECTRO-OPTICAL SCANNER.

3,540,796. ELECTRO-OPTICAL COMPOSITIONS AND DEVICES.

3,541,234. VIDEO CIRCUITS EMPLOYING CASCODED COMBINATIONS OF FIELD EFFECT TRANSISTORS WITH HIGH VOLTAGE, LOW BANDWIDTH BIPOLAR TRANSISTORS.

3,541,475. LINE TERMINATING CIRCUITS.

3,541,240. AUTOMATIC BEAM CURRENT LIMITING USING REFERENCE CURRENT SOURCES.

3,540,812. SPUTTER ION PUMP.

3,541,525. MEMORY SYSTEM WITH DEFECTIVE STORAGE LOCATIONS.

3,541,241. CIRCUIT FOR ELIMINATING SPURIOUS MODULATION OF THE SUBCARRIER FREQUENCY OSCILLATOR IN A COLOR TELEVISION RECEIVER.

3,541,242. COLOR TEMPERATURE CORRECTION CONTROLLED BY THE COLOR KILLER AND COLOR OSCILLATOR.

3,541,553. SATELLITE COMMUNICATIONS SYSTEMS.

3,541,515. SINGLE WIRE CROSSPOINT SWITCHING CIRCUIT WITH EXTERNAL SIGNALING.

3,541,466. GATED DIFFERENTIAL AMPLIFIER.

3,542,946. VIDEO RECORDING AND REPRODUCING APPARATUS UTILIZING A SINGLE TRACK ON A MAGNETIC TAPE FOR THE LUMINANCE AND COLOR INFORMATION COMPONENTS OF A COLOR TELEVISION SIGNAL.

3,543,106. MICROMINIATURE ELECTRICAL COMPONENT HAVING INDEXABLE RELIEF PATTERN.

3,542,950. SERVO SYSTEM.

3,542,452. TRANSITORY HOLOGRAM APPARATUS.

3,542,286. TIMING SYSTEM FOR READOUT OF STORED DATA.

3,543,240. LIGHT PEN OPERATING WITH REMOTE GRAPHIC DISPLAY.

3,542,284. ELECTROMECHANICAL COUPLING.

3,544,811. LOCK-IN PREVENTION IN TRANSISTOR DEFLECTION CIRCUITS.

3,544,810. SPURIOUS OSCILLATION SUPPRESSION IN TRANSISTOR DEFLECTION CIRCUITS.

3,543,841. HEAT EXCHANGER FOR HIGH VOLTAGE ELECTRONIC DEVICES.

3,544,831. GRID SUPPORT FOR ELECTRON TUBES.

3,544,902. RECEIVER GAIN CONTROL SYSTEM PROVIDING NEGATIVE RESISTANCE STABILIZATION.

3,544,832. TRAVELING WAVE TUBE WITH EVAPORATED NICKEL ATTENUATOR COATING AND METHOD OF MANUFACTURE THEREOF.

3,544,860. INTEGRATED POWER OUTPUT CIRCUIT.

3,544,738. MOMENTARY RETAINING TRANSLATION MEANS FOR MULTIPLE SWITCHES.

3,544,316. SUPERCONDUCTORS.

3,544,982. MULTI-HEAD MAGNETIC TRANSDUCER.

3,546,528. CAPACITOR DISCHARGE IGNITION CIRCUIT.

3,546,611. HIGH VOLTAGE WIDE BAND AMPLIFIER.

3,546,618. LOW POWER, HIGH STABILITY DIGITAL FREQUENCY SYNTHESIZER.

3,546,487. DRIVE CIRCUIT FOR DIGIT LINES.

3,546,495. SEMICONDUCTOR LASER LOGIC APPARATUS.

3,546,681. PROGRAMMER METHOD FOR MANIPULATING ELECTRONIC FONTS IN ELECTRONIC PHOTOCOMPOSING SYSTEMS.

3,546,627. TRANSISTOR HIGH CURRENT SWITCHING AND INVERTER CIRCUITS.

3,546,075. EXPANDABLE METAL STRUCTURE MAKING BY ETCHING.

3,545,834. SEQUENTIAL INFORMATION HOLOGRAM RECORD.

3,546,637. TUNABLE MICROSTRIP BAND PASS FILTER UTILIZING GYROMAGNETIC MATERIAL AT THE JUNCTION OF TWO CONDUCTIVE LOOPS.

3,546,373. COLOR TELEVISION CAMERA OVERLOAD COMPENSATING SYSTEM.

3,546,372. VERTICAL AND HORIZONTAL APERTURE EQUALIZATION.

3,545,767. AUTOMATIC RECORD CHANGER.

3,546,602. BURST FLAG GENERATOR.

3,546,617. DIGITAL FREQUENCY SYNTHESIZER.

3,547,628. PROCESS OF THERMOPLASTIC DEFORMATION IMAGING.

3,548,233. CHARGE STORAGE DEVICE WITH PN JUNCTION DIODE ARRAY TARGET HAVING SEMICONDUCTOR CONTACT PADS.

3,548,236. DARK TRACE CATHODE RAY TUBE WITH PHOTOCHROMIC IMAGE SCREEN.

3,548,315. COMPENSATED VHF-UHF AUTOMATIC GAIN CONTROL DELAY SYSTEM.

3,549,251. ELECTROPHOTOGRAPHIC METHOD AND APPARATUS.

3,549,899. INPUT AND OUTPUT EMITTER-FOLLOWER CML CIRCUITRY.

3,549,900. CURRENT MODE SWITCHING CIRCUIT.

3,549,904. NON-DESTRUCTIVE READ-OUT MEMORY CELL.

3,549,911. VARIABLE THRESHOLD LEVEL FIELD EFFECT MEMORY DEVICE.

3,550,089. COMPLEMENTARY SEMICONDUCTOR MATRIX ARRAYS FOR LOW POWER DISSIPATION LOGIC APPLICATION.

3,550,096. PHOTOCHROMIC MEMORY IN WHICH MEMORY LOCATION IS SELECTIVELY HEATED DURING WRITE CYCLE.

3,550,828. TAPE LEVEL SENSOR.

3,551,026. CONTROL OF OPTICAL PROPERTIES OF MATERIALS WITH LIQUID CRYSTALS.

3,551,689. ALTERNATING CURRENT DRIVEN LOAD CIRCUIT.

3,551,693. CLOCK LOGIC CIRCUITS.

3,551,696. OSCILLATING VOLTAGE RANGE INDICATOR.

3,551,787. THYRISTOR CONTROL CIRCUIT USING D.C. CONTROLLABLE TRIGGERING MEANS.

3,551,819. UHF-VHF TUNER WITH U-SHAPED STRIP BALANCED TRANSMISSION LINE.

3,551,842. SEMICONDUCTOR LASER HAVING HIGH POWER OUTPUT AND REDUCED THRESHOLD.

3,551,898. COMPUTER MEMORY ADDRESSING.

3,551,900. INFORMATION STORAGE DECODER SYSTEM.

3,551,997. METHODS FOR ELECTROLESS PLATING AND FOR BRAZING.

3,552,824. PHOTOCHROMIC LIGHT VALVE.

3,553,485. RFI-PROTECTED FLIP-FLOP.

3,553,500. MICROSENSING NETWORK.

3,553,536. SEMICONDUCTOR RECTIFIERS HAVING CONTROLLED AND RECOVERY CHARACTERISTICS.

3,553,676. ELECTRO-OPTICAL COMPOSITION SYSTEM.

3,553,731. ANTENNA COMPRISING RESTRAINING MEANS FOR RESILIENT SUPPORT MEMBERS.

3,553,357. SWITCHING MODE CONTROL CIRCUITS.

3,553,828. LEAD ASSEMBLY STRUCTURE FOR SEMICONDUCTOR DEVICES.

3,554,637. PICTURE PROJECTION WITH SOUND.

3,554,796. METALLIZATION OF TITANATE WAFERS.

3,554,821. PROCESS FOR MANUFACTURING MICROMINIATURE ELECTRICAL COMPONENT MOUNTING ASSEMBLIES.

3,554,832. PROCESS FOR HANDLING AND MOUNTING SEMICONDUCTOR DICE.

3,555,175. KINESCOPE BIAS TRACKING CIRCUITS.

3,555,182. PLURAL OPERATING MODE AUTOMATIC GAIN CONTROL SYSTEM.

3,555,195. MULTIPLEX SYNCHRONIZING CIRCUIT.

3,555,249. SELF-CORRECTING SHIFT COUNTER.

3,555,309. ELECTRICAL CIRCUITS.

3,555,343. AUTOMATIC DEGAUSSING CIRCUIT FOR TV HAVING HALF-WAVE VOLTAGE DOUBLER POWER SUPPLY.

3,555,433. BI-DIRECTIONAL SHIFT REGISTER.

3,555,460. ELIMINATION OF MODE SPIKES IN MICROWAVE FERRITE PHASE SHIFTERS.

3,555,518. RECORDING TRANSDUCER SELECTION LIMITER.

3,555,520. MULTIPLE CHANNEL DISPLAY SYSTEM.

3,555,640. METHOD OF MOUNTING A HEATER IN A TUBULAR CATHODE.

3,556,035. SAILING VESSEL.

3,556,244. VEHICLE ROAD GUIDANCE SYSTEM.

3,556,879. METHOD OF TREATING SEMICONDUCTOR DEVICES.

3,556,880. METHOD OF TREATING SEMICONDUCTOR DEVICES TO IMPROVE LIFETIME.

3,56,966. PLASMA ANODIZING ALUMINIUM COATINGS ON A SEMICONDUCTOR.

3,557,430. DE-SOLDERING APPARATUS.

3,558,208. OPTICAL COMPENSATING FILTER WITH SELECTIVE RADIAL ABSORPTION DISTRIBUTION.

3,558,310. METHOD FOR PRODUCING A GRAPHIC IMAGE.

3,558,806. MATRIXING APPARATUS.

3,558,815. VIDEO SIGNAL SWITCHING STEP SUPPRESSOR.

3,558,889. BULK SEMICONDUCTOR LIGHT RADIATING DEVICE.

3,558,953. BEAM LANDING ERROR CONTROL APPARATUS FOR MAGNETICALLY FOCUSSED CATHODE RAY TUBES.

3,558,954. COLOR TUBE HAVING GROUND PLANE BETWEEN FOCUS ELECTRODES AND SCREEN GRIDS.

3,558,992. INTEGRATED CIRCUIT HAVING BONDING PADS OVER UNUSED ACTIVE AREA COMPONENTS.

3,559,030. PULSE WIDTH MODULATED SOLID STATE REGULATED POWER SUPPLY.

3,559,097. HIGH POWER, HIGH EFFICIENCY SILICON AVALANCHE DIODE UHF AND L BAND OSCILLATOR.

3,559,127. SUPERCONDUCTIVE MAGNET CONSTRUCTION.

3,559,130. SUPERCONDUCTIVE MAGNET AND METHOD OF CONSTRUCTING SAME.

3,559,203. AGITATION SENSITIVE ALARM CIRCUIT.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 13, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-01-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	3-02-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-01-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-03-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director.. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	10-12-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-09-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-30-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	7-06-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	2-27-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	6-23-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-01-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	5-01-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-01-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	8-10-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	7-01-70

Expiration of patents: The patents within the range of numbers indicated below **expire during** July 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,682,658 to 2,685,084, inclusive
Plant Patents..... Numbers 1,288 to 1,293, inclusive

PATENTS

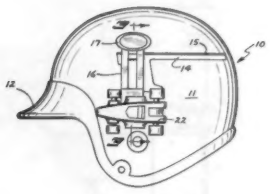
GRANTED AUGUST 3, 1971

GENERAL AND MECHANICAL

3,596,288
WRESTLING HELMET
John L. Marchello, 56405 Grand River, New Hudson, Mich.
Filed Apr. 9, 1970, Ser. No. 26,955
Int. Cl. A63b *71/10*
U.S. Cl. 2—3 **9 Claims**

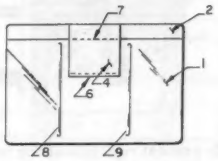
A wrestling helmet formed of a pair of roughly inverted triangular-shaped bulged ear guards, each having an upper and rear strap member integral with its upper corners, the strap members being adjustably interconnected for positioning the guard over the wearer's ears with the rear strap at the rear of the head near the base of the skull and the upper strap extending over the top of the head slightly rearwardly of the forehead. The lower corners of the guards are interconnected by a chinstrap whose opposite ends are snap fastened to the guards within recessed sockets and ear padding is arranged within the bulged portions of the guards.

3,596,289
COMBINATION HELMET AND HANGER MEANS FOR CARRYING TOY VEHICLES
Cecil F. Adickes, Playa Del Rey, Calif., assignor to Tonka Corporation, Mound, Minn.
Filed May 1, 1970, Ser. No. 33,730
Int. Cl. A42b *3/00*, *1/24*
U.S. Cl. 2—3 **2 Claims**



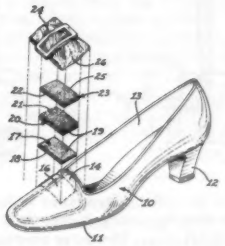
A helmet of rigid material adapted to be worn on the head of a child, the helmet having a plurality of horizontal slots formed in the head encircling side portions thereof, and a plurality of hanger members each having a clip adapted to be engaged in one of said slots and a means for detachably carrying a miniature toy vehicle enabling the child to carry a plurality of such vehicles on the helmet for selective detachment and use in play.

3,596,290
SIDE GLARE SPECTACLE VISOR, assignor to Francis B. Kennedy, 3000 N. Romero Road, A-6, Tucson, Ariz.
Filed Sept. 5, 1968, Ser. No. 757,602
Int. Cl. A61f *9/08*
U.S. Cl. 2—13 **2 Claims**



A thin sheet of moderately transparent material is provided with a spring clip for fastening the sheet to one temple of a pair of spectacles.

3,596,291
SHOE-BUCKLE MOUNTING
Cecilia E. Thill, 7534 E. Osborn Road, Scottsdale, Ariz.
Filed Sept. 15, 1969, Ser. No. 857,807
Int. Cl. A41d *27/08*
U.S. Cl. 2—245 **2 Claims**

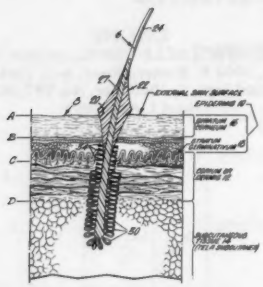


A mounting arrangement for securing a buckle to a shoe confined to the outer surface of the shoe so as not to in any way interfere with the original smooth and comfortable inside surface of the shoe, the buckle being demountably secured to the shoe.

3,596,292
HAIR IMPLANT STRUCTURE
Robert A. Erb, Schuylkill Township; William B. Tarpley, Jr., West Chester, and Peter Schuyler Francis, Rose Valley, all of, Pa., assignors to The Franklin Institute, Philadelphia, Pa.
Filed Feb. 20, 1969, Ser. No. 800,847
Int. Cl. A61f *1/00*; A61b *17/00*; A41g *5/00*
U.S. Cl. 3—1 **22 Claims**

A hair implant suitable for placement in the human scalp to overcome the appearance of baldness. The implant may be small to provide only one or a few hairs per implant, or may be larger to cover a substantial area and to provide a larger number of hairs. The implant has a percutaneous portion with elastic properties similar to those of the living skin in

which it is implanted, and has a cross section diverging outwardly from the skin so that an acute angle is formed between the lateral surfaces of the percutaneous portion of the implant and the surface of the adjacent skin in which it is implanted. This construction enhances the seal between implant and surrounding skin surface so as to minimize chances

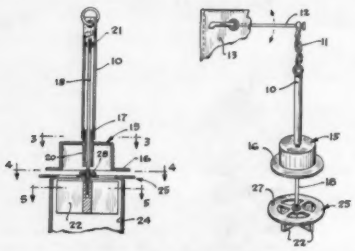


of infection. To prevent rejection of the implant, the implant is made of body-compatible materials and is provided with an anchoring portion comprising a tissue-permeable structure, such as velour loops, situated below the stratum germinativum, in the corium and/or subcutaneous tissue, and permeated by the living and growing tissue.

3,596,293
FLUSH TANK VALVE

Thomas Thomas, 1110 Breezy Meadown Lane, Spencer, Iowa

Division of Ser. No. 796,264, Jan. 6, 1969, Pat. No. 3,555,572
Filed July 30, 1970, Ser. No. 59,457
Int. Cl. E03d *1/34*
U.S. Cl. 4—58 **3 Claims**

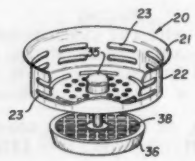


A flush valve for toilet water tanks which comes as a unit and can be installed by setting it over the drainpipe and connecting it to the lift lever. The valve contains weights to hold the device in place and a buoyant sealing cup associated with a stem which operates in a sleeve.

3,596,294
SINK-DRAIN DEVICE

Frank P. Hoffman, 1270 E. 19th St., Brooklyn, N.Y.

Filed May 11, 1970, Ser. No. 36,291
Int. Cl. A47k *1/14*; **E03c** *1/26*
U.S. Cl. 4—287 **3 Claims**

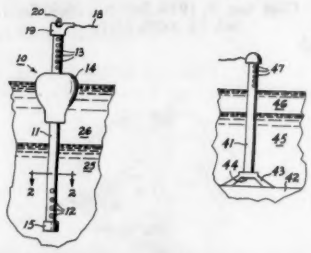


This invention comprises an improved basket strainer or sink-drain device and includes an improved stop valve therefor. The improved strainer consists of the provision of a plurality of elongated apertures having integral baffle plates adapted to deflect the flow of waste water from the perimeter of the strainer toward the center thereof and an improved stop valve having a cuplike catch basin having a disk screen retainer thereon for entrapping all solid waste articles of an elongated configuration.

3,596,295
ICE PROTECTION SYSTEM FOR SWIMMING POOLS

John C. Wilson, Rochester, N.Y., assignor to Quarius Corp., Ontario Center, N.Y.

Filed Sept. 25, 1969, Ser. No. 861,050
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.15 **8 Claims**

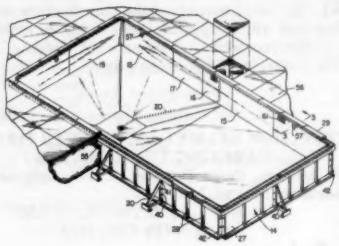


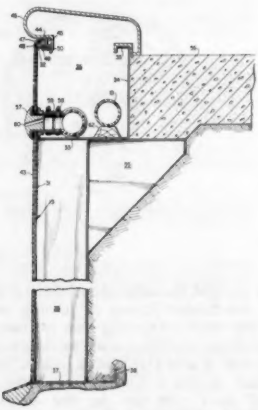
A swimming pool is protected from ice damage by an internally heated tube placed to form a water passageway extending above and below the expected ice level so water can be forced up through the tube from below the ice and discharged above the ice to relieve the pool of under-ice pressure.

3,596,296
PREFABRICATED SWIMMING POOL

Raymond A. Gertz, 71 Chatham Road, and Junius Gertz, 11 Lenox Road, both of Cranston, R.I.

Filed Mar. 20, 1970, Ser. No. 21,402
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.17 **6 Claims**

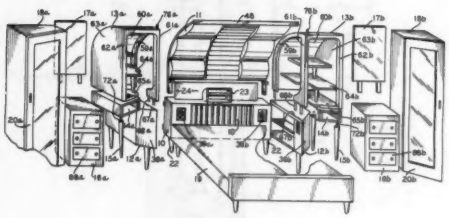




A lined pool which has standardized vertical wall sections with upper troughs and flexible supply piping and flexible

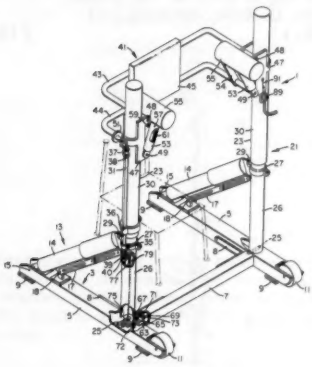
skimmer piping housed in said troughs to eliminate the need for a watertight trough and the problem of ground support or ground engagement with the piping.

3,596,297
MODULAR FURNITURE
Herbert James, 331 W.17th St., Lorain, Ohio
Filed Dec. 29, 1969, Ser. No. 888,790
Int. Cl. A47b *47/00*; A47c *13/18*
U.S. Cl. 5—2 **15 Claims**



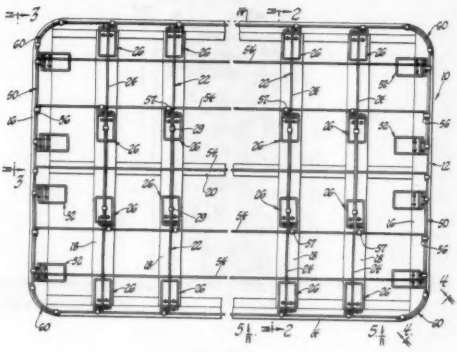
A central base unit has hinged cabinets at the ends adapted to be pivoted forwardly at right angles to the base unit to form a cubicle. A main canopy is provided on the base unit and supplementary canopies are supported on the hinged cabinets and either by dresser units or detachable legs. Wardrobes are provided for disposition outwardly of the dressers. Various subcombinations can be formed from the various parts.

3,596,298
LIFTING DEVICE
John A. Durst, Jr., 1050 Graham Hill Road, Santa Cruz, Calif.
Filed May 14, 1969, Ser. No. 824,630
Int. Cl. A61g *7/10*; A47c *7/54*
U.S. Cl. 5—81 **7 Claims**



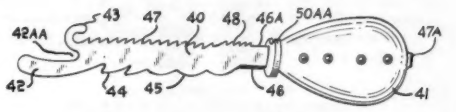
Lifting apparatus adaptable for aiding an ambulatory handicapped person. The apparatus may accommodate a person between a sitting position and a standing position. The apparatus aids in raising or lowering the individual between the two positions. The apparatus includes a pair of arm rests for engaging an individual beneath the junction of the arm and shoulder. The apparatus provides lateral and vertical movement of the rests. The vertical motion of the rests responds to a first piston means and the lateral motion to a second piston means with the start and stop operation controlled directly by the individual.

3,596,299
SPRING ASSEMBLY
Chester E. Klicki, Warren, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed June 30, 1969, Ser. No. 837,685
Int. Cl. A47c *23/02*
U.S. Cl. 5—247 **11 Claims**



A box spring assembly including a generally rectangular frame with a first plurality of spring members extending transversely between the sides of the frame and spaced from one another longitudinally of the frame. Each spring member is defined by an integral wire having a straight load section and a fishmouth section at each end thereof. The spring members are disposed in pairs overlapping one another transversely of the assembly. A border wire is disposed about transversely of the assembly. A border wire is disposed about the assembly and is spaced from the frame and attached to the fishmouth sections of the spring members. A second plurality of spring members are included which comprise at least one similar fishmouth section and disposed at the ends of the assembly between the frame and the border wire. There is also included a plurality of transversely spaced integral straight wires extending longitudinally of the assembly and terminating in bent end portions which are connected to the border wire.

3,596,300
DEVICES AND ACCESSORIES FOR AND WITH LINE HOLDER-CUTTER HANDTOOL COMBINATION
Paul M. D'Amico, 2709 S. 12th St., Philadelphia, Pa.
Filed May 1, 1969, Ser. No. 828,072
Int. Cl. B25f *1/00*; B26b *11/00*
U.S. Cl. 7—14.1 **4 Claims**

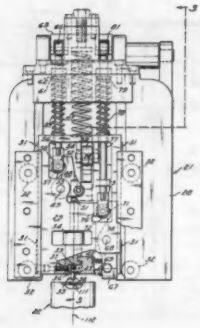


My invention relates to devices and accessories for and with Line Holder-Cutter Handtool Combination Means; in the order of:

a. An improvement in a multipurpose safety sport or fisherman's knife, purposed for shell-shucking clams, oysters and shellfish, including the dressing of fish generally.

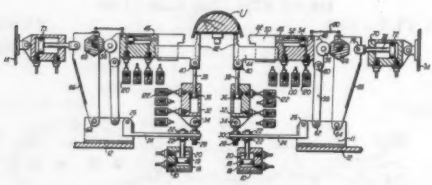
b. An extensional means, having a safety proviso means for engaging said safety-knife means in a slot hole tie hook elevated operational utility, for the large assortment of sizes of said shelled bivalves.

3,596,301
POINTER
Allan D. Haines, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio
Filed Dec. 4, 1968, Ser. No. 781,092
Int. Cl. B23g 9/00; B21k 1/44
U.S. Cl. 10—9 15 Claims



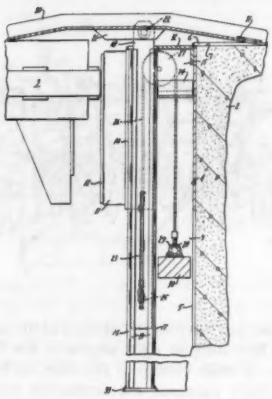
A high-speed pointer for bolts, screws, and the like is disclosed which includes a gripper chuck operable to carry blanks into cutting engagement with a rotating cutter. The chuck includes power-operated gripper means to grip the blank and power means provided to reciprocate the chuck toward and away from the cutter. The chuck is urged toward the cutter by a drive spring sized to feed the blank into cutters without "chatter." The gripper means are provided with springs which actuate the grippers and also function to urge the chuck toward the cutter when the grippers are released. Therefore, the gripper-actuating springs also function to assist in both accelerating starting down movement and decelerating arriving up movement of the chuck.

3,596,302
MACHINE FOR SHAPING AND WIPING UPPERS OVER A LAST
Henry von den Benken, 2212 Centre St., West Roxbury, Mass.
Filed May 8, 1969, Ser. No. 823,080
Int. Cl. A43d 21/00, 29/00
U.S. Cl. 12—8.5 21 Claims



There is disclosed herein a lasting machine for shaping the upper over a last and wiping the lasting margin over the insole. The machine is equipped with a plurality of novel pincers which are arranged in two rows along the sides of the shoe in the machine, and the pincers are alternately operable to grip and pull the upper taut over the last and then wipe the upper over the insole. A set of rotary profile cams provides for quick positioning of the pincers as is needed to last right or left shoes, or shoes of various sizes. Furthermore, all pincers can be adjusted essentially perpendicular to the shoe, thus bringing about a position in accordance with the bottom contour of the last.

3,596,303
DOCKBOARD
Garrett P. Kelley, Fox Pint, and William C. Steinberg, Shorewood, both of, Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.
Filed Sept. 19, 1966, Ser. No. 580,347
Int. Cl. B65g 11/00
U.S. Cl. 14—71 10 Claims

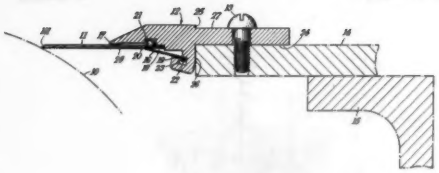


A dockboard pivotally connected intermediate its ends to guides which is movable in fixed guides on the face of the dock whereby the dockboard may be lifted from a substantially vertical stored position below dock level to a raised position, rotated into substantially horizontal cross traffic position, and then lowered to span the gap between the dock and the bed of a carrier.

3,596,304
ROLLER TYPE PAINT APPLICATOR
David I. Welt, 7480 S.W. 128th, Miami, Fla.
Filed May 8, 1969, Ser. No. 822,957
Int. Cl. B05c 1/08; B25g 1/04
U.S. Cl. 15—230.11 8 Claims

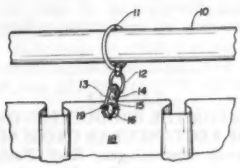
A paint-roller assembly comprising a cantilevered roller balanced relative to a support shaft which has a tubular handle integrally molded thereon; said handle having transverse grooves opening toward the roller for hanging the roller on a paint bucket, including undulations conforming to the user's hand, and including an axial socket in which an auxiliary extension handle is removably engaged and which permits two-handed paint application.

3,596,305
DOCTORS FOR PAPER MAKING AND LIKE MACHINES
Albert Henry John Boyland, London, England, assignor to Vickerys Limited, London, England
Filed May 13, 1968, Ser. No. 728,727
Claims priority, application Great Britain, May 25, 1967, Feb. 1, 1968, 24451/67, 5176/68
Int. Cl. D21g *3/00*
U.S. Cl. 15—256.51 3 Claims



A doctor for the roll of a papermaking machine having a pressure plate which bears against the face of the doctor blade which contacts the roll and at a location behind a nose on the holder of the doctor which bears against the other face of the blade.

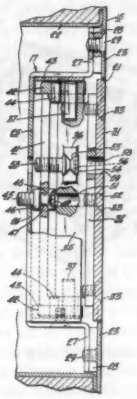
3,596,306
CAFE AND LIKE CURTAIN HANGERS
Andre Y. Wachenheimer, c/o Gateway Towers, Gateway Center, Pittsburgh, Pa.
Filed Aug. 27, 1968, Ser. No. 755,551
Int. Cl. A44b *17/00*; E05d *13/02*
U.S. Cl. 16—87.2 5 Claims



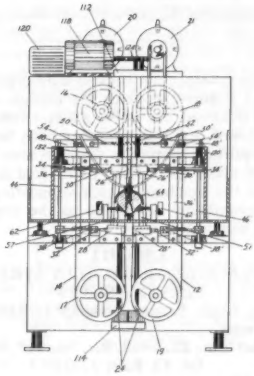
A curtain ring having annulus means adapted to slide on a curtain rod and removable depending attaching means on said annulus, said attaching means including a separable member fixed to a curtain and being formed of an organic solid resin.

3,596,307
ADJUSTABLE MOUNTING FOR DOORS
Samuel Kolmetsky, 156 Chestnut St., Woodlynne, N.J.
Filed July 9, 1969, Ser. No. 840,360
Int. Cl. E05d *7/04*
U.S. Cl. 16—129 7 Claims

A device adapted to be mounted in a metal buck or, wooden jamb of a door so that conventional hinges may be used to hang the door while the device permits connecting the position by the hinge so that the door may be adjusted and aligned, not only during the initial hanging of the door, but at a later point of time to compensate for settling of the building or other problems. The device includes a mounting bracket which is adapted to mate with a hinge leaf and which is adjustable about a vertical pivotal axis as well as being adjustable within the plane of the door opening parallel to said vertical pivotal axis.



3,596,308
FISH-FILLETING APPARATUS
Leon S. Kenney, 465 22nd Ave. S.E., St. Petersburg, Fla.; Charles Bevis, 2902 Terry Road, Tallahassee, Fla., and Wiley J. Daniels, Rte. 9, Box 634, Tallahassee, Fla.
Filed May 12, 1969, Ser. No. 823,721
Int. Cl. A22c *25/16*
U.S. Cl. 17—56 10 Claims

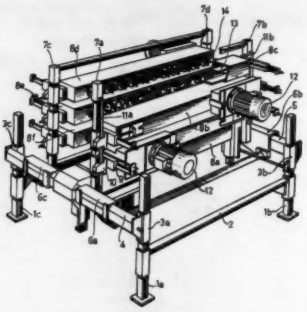


A fish-filleting apparatus comprising two oppositely rotating bandsaw blades that are adjustable to conform to the bony skeleton of a fish whereby fish fillets are cut with minimum flesh loss as the fish passes between the blades. The fish is uniquely aligned to be centered to the blades and is held rigidly while being filleted to prevent it from twisting.

3,596,309
POULTRY-PLUCKING MACHINE
Jacobus Gerardus Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam N. V., Amsterdam, Netherlands
Filed Dec. 11, 1968, Ser. No. 782,903
Claims priority, application Netherlands, Oct. 24, 1968, 6815188
Int. Cl. A22c *21/02*
U.S. Cl. 17—11.1 1 Claim

A poultry-plucking machine is provided with a number of rotating plucking discs each with axially protruding elastic plucking fingers. The discs are supported by substantially identical, oblong, prismatic carriers which each support a number of plucking discs lying in the longitudinal direction

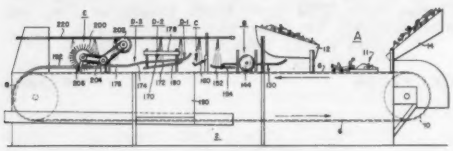
of the carrier, while each carrier is provided with a driving motor for driving the plucking discs. The carriers are accommodated in a frame such that they are easily detachable and that both the level of the respective carriers, their mutual distance and their angular position can be adjusted at will.



3,596,310
CRAB-PROCESSING MACHINE

Calvert B. Tolley, Wingate, Md.

Filed Aug. 6, 1969, Ser. No. 847,952
Int. Cl. A22c *29/00*
U.S. Cl. 17—71 **20 Claims**

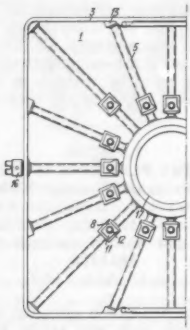


A machine for transporting cooked hard crabs to a plurality of successive stations at which the carapace is removed, the pincers are removed, the walking legs, swimming legs and viscera are removed, and the remaining body is scrubbed and washed. An important feature is the provision of means for supporting each crab, and cutting parts from it as it is transported through the machine, which supporting and cutting means are automatically adjustable to the size of each individual crab which is processed.

3,596,311
APPARATUS FOR ISOTROPICALLY STRETCHING A PLASTICS SHEET

Michel Salmon, Lyon, France, assignor to Rhone-Poulenc S. A., Paris, France

Filed Mar. 22, 1968, Ser. No. 715,388
Int. Cl. B29c *17/00*
U.S. Cl. 18—1 FS **6 Claims**

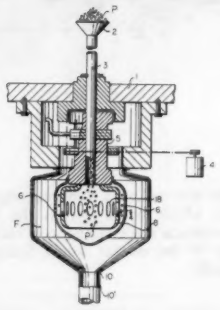


The invention provides an apparatus for isotropically stretching a plastics sheet in which the sheet is gripped by a plurality of grippers, which are disposed in an array of a particular configuration, e.g. a circle or a square. In order to stretch the sheet the grippers are moved outwardly on screw-threaded rods which are geared together, e.g. by bevel gears, at a rate to maintain the same configuration.

3,596,312
APPARATUS FOR PRODUCING SYNTHETIC RESIN FIBERS UTILIZING CENTRIFUGAL FORCE

Koei Ohmatsu, 1137, Sei, Gifu, Japan

Continuation of application Ser. No. 682,046, Nov. 13, 1967, now abandoned. This application Feb. 10, 1970, Ser. No. 10,207
Int. Cl. B29c *23/00*; **D01d** *5/08*
U.S. Cl. 18—2.6 **6 Claims**

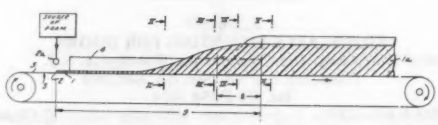


Apparatus for producing a synthetic resin fiber, in which a synthetic resin material is charged into a hollow rotary body and made molten therein, or said synthetic resin material is charged into the hollow rotary body in the molten state, heat is applied within the hollow rotary body by the presence of internal heaters, and the hollow rotary body is rotated at high speed, whereby the molten resin material is ejected through nozzles or slits formed in the peripheral wall of the hollow rotary body by the centrifugal force developed therein and thereby a twisted fibrous yarn of said resin material is produced continuously by continuous removal in the axial direction.

3,596,313
APPARATUS FOR THE PRODUCTION OF FOAMED SLABS OF RECTANGULAR CROSS SECTION

Heinz Darmochwal, Memmingen; Emil Hasford, Lochham near Munich; Gerhard Muller, Memmingen, and Karl-Heinz Stelzer, Memmingen, all of, Germany, assignors to Metzeller AG, Munich, Germany

Filed July 16, 1968, Ser. No. 745,267
Claims priority, application Germany, July 18, 1967, P 17 04 837.2
Int. Cl. B29c *5/02*, *5/10*
U.S. Cl. 18—4 B **12 Claims**



Foam is fed into and forms a loaf in a trough-shaped conveyor whose bottom wall travels lengthwise and entrains a release liner which flanks the loaf from below and at both sides during travel through an elongated foaming station and thereupon through a curing station. The cross-sectional area

of an intermediate portion of the conveyor varies gradually and assumes a rectangular outline at least in the downstream part of the foaming station. Such variation in the cross-sectional area is due to changing configuration of the sidewalls and/or to inclination of the bottom wall.

3,596,314

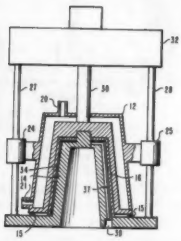
APPARATUS FOR FORMING A DENSIFIED FIBROUS ARTICLE

Arthur Krugler, Whittier, Calif., assignor to Hitco

Filed Nov. 26, 1968, Ser. No. 779,154

Int. Cl. B29c *11/00*

U.S. Cl. 18—5 **6 Claims**



A shaped article is formed from a preformed fibrous felt by densifying the felt between male and female die members, the outer surface of one of the die members being provided with a plurality of restraining edges which prevent the felt from slippage during the densification. As the article is subjected to substantial compression and densification, its ignition characteristics, dimensional stability, water absorption and strength characteristics are significantly improved while structural integrity during the densifying step is maintained.

3,596,315

APPARATUS FOR THE CONTINUOUS MANUFACTURE OF THERMOPLASTIC RESINOUS CONTAINERS

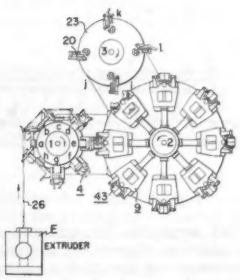
Shinsuke Yoshikawa, and Yuji Sawa, both of Fukushima-Ken, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 19, 1969, Ser. No. 851,289

Claims priority, application Japan, Aug. 21, 1968, Aug. 22, 1968, Aug. 22, 1968, 43/59193; 43/59516; 43/59515

Int. Cl. B29d *23/03*

U.S. Cl. 18—5 BT **2 Claims**



Apparatus for the continuous manufacture of containers from a thermoplastic resin, comprising three rotaries; a parison-transferring rotary, a blow-molding rotary and a rotary for removal of the product and for pinhole test. The first rotary is arranged as a rotary-type transferring device between the molding machine and the extruder, in which the continuously extruded tubular parison is continuously stretched and cut to a desired length, and this cut parison, after rotation thereof by 90°, is inserted into one of the metal molds in the point of contact with the second rotary being a blow molding rotary, whereby the waste of material as in the conventional rotary blow molding machines can be eliminated. The second rotary is equipped with several or dozens of sets of metal molds and their tightening means. These metal molds are synthetic resin blow-molding ones in which sealing of the product and utilization of the material can be performed efficiently. In this case, two sets of split molds are combined with their container bottom-forming portions opposed to each other and a blow pin is arranged between said bottom forming portions so as to form two containers at a time, and a pressing mechanism for closing the top of the container and adapted to be movable at right-angles to the split face of the mold is provided, thus improving the operational efficiency and reducing remarkably scraps in the ranges of the top and bottom of the container. Normally, in the case of resins from which narrow-necked containers cannot be made by blow molding and biting off as in the case with vinylidene chloride, only large necks than the diameter of the parison can be formed. Of course, it is possible to make the diameter of the neck substantially equal to or smaller than that of the parison by arranging any guide at the position of the neck, but this leads to reduction of the yield by an amount corresponding to the width of the guide. According to the present invention, the parison is pressed in a direction perpendicular to the split mold, thereby to realize the same effect as that of the guide and moreover to enable the container to be sealed tight enough to prevent penetration of bacteria. In order to facilitate sealing of the container at the bottom immediately after blow molding, high frequency electrodes may be provided at the bottom-forming portion of the metal mold. The so produced container is taken out from the mold by grasping it at the portion grasped for transfer from the first to the second rotary, as soon as the mold is opened at the point of contact with the third rotary. Then, the unnecessary portion between the bottoms of two containers is removed by a bottom cutter while air-cooling them and at the same time the body of the sealed container is compressed with a certain pressure to check it for freedom from pinholes. Finally, the finished containers are sorted as acceptable or not an are made to fall down.

3,596,316

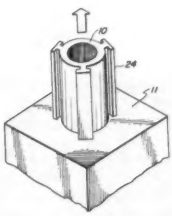
BLOW-MOLDING APPARATUS

Richard C. Palermo, West Webster, and Charles Dolcimascolo, Fairport, both of, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Sept. 4, 1968, Ser. No. 757,249

Int. Cl. B29c *5/06*

U.S. Cl. 18—5 BM **3 Claims**

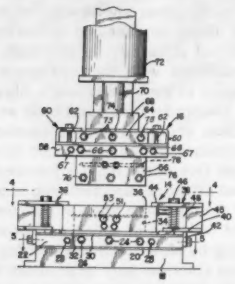


A flexible one-piece liner of elastomer material insertable in a blow-molding cavity, the internal surface of the liner conforming to the shape and texture of the article to be blow molded. After molding, the liner is deformed sufficiently to permit the molded article to be separated therefrom.

3,596,317
APPARATUS FOR MAKING PLASTIC-EMBEDDED SPECIMENS

Donald C. Nicholson, 811 11th St., Rock Island, Ill.

Filed Aug. 15, 1969, Ser. No. 850,476
Int. Cl. B29c 6/00, 5/00
U.S. Cl. 18—5 R 8 Claims

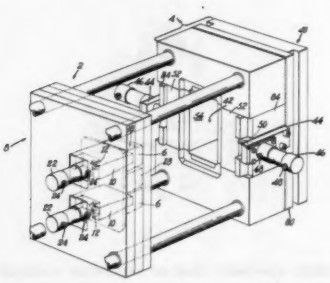


A method and an apparatus for embedding entomological specimens or the like in a clear transparent plastic material, wherein the method comprises positioning the specimen between layers of thermoplastic resin material in granular or powder form and confining the same in a suitable die cavity, with provision for preheating the die cavity, applying heat sufficient to melt the resin without appreciable pressure, placing the melted material under predetermined pressure and heating to a temperature sufficient for polymerization, vacuumizing to remove excess gases, cooling the liquified material to set the same and removing the resultant solid plate from the cavity. The apparatus comprises a female molding member in the form of a rectangular frame adapted to be positioned on a Pyrex glass plate, with electrical means for heating the same, means for circulating a cooling liquid through the walls of the frame, and means for vacuumizing the cavity, and a cooperating male molding member which comprises a punch with heating means and a conduit therein for circulating a cooling fluid which molding member is arranged on a piston for operation by an air cylinder mounted above the female molding member so as to telescope the punch within the die cavity. Provision is made for replacing the mold forming members with other members of different size.

3,596,318
MOLD ASSEMBLY FOR MOLDING OF FOAMED PLASTIC ARTICLES

William T. Kyritsis, Beverly Farms, and Marvin C. Picard, Leominster, both of, Mass., assignors to USM Corportaion, Flemington, N.J.

Filed Jan. 7, 1969, Ser. No. 789,497
Int. Cl. B29d 29/04
U.S. Cl. 18—5 P 12 Claims

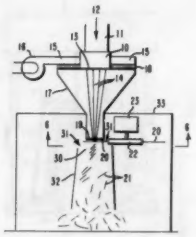


Mold assembly for the injection foam molding of a boxlike container having interior partitions dividing the container into a plurality of cells, the mold assembly being characterized by means for moving inside and outside wall-forming portions of the mold cavity whereby to permit expansion of all of the walls of the molded container, including the inside partitions.

3,596,319
FOAM FILAMENT CUTTER

Winfield L. McKenica, Wilmington; Marvin Scher, Wilmington, and James Gerald Smith, Newark, all of, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 22, 1968, Ser. No. 746,353
Int. Cl. D01d 7/00
U.S. Cl. 18—8 B 7 Claims

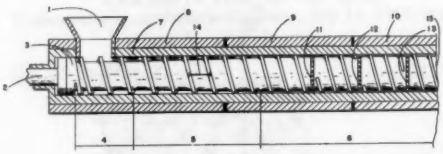


Gas-inflated foamed filaments are cut to staple length immediately after spinning by a whirling knife cutter located well below the spinneret. A duct surrounds the filaments from spinneret to cutter and confines a sheath of gas flowing cocurrently with the filaments. Velocity of gas is low in upper part of duct, but greater than rate of filament extrusion in lower part. A second duct below the cutter prevents rapid deceleration and expansion of the gas so that fibers are conveyed away from the cutter. Cross sections of ducts are much larger than total cross section of filaments so contact of filaments with walls is avoided.

3,596,320
APPARATUS FOR MELTING AND DISPERSION OF THERMOPLASTIC POLYMERS

Donald P. Manning, Colonial Heights; Lloyd D. Caison, Hopewell, and Frank R. Jones, Chester, all of, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 15, 1968, Ser. No. 776,092
Int. Cl. B29f 3/02
U.S. Cl. 18—12 6 Claims

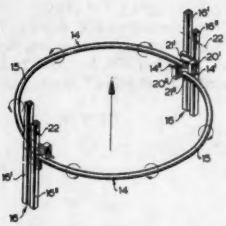


An improved apparatus for uniformly mixing polymer materials and additives wherein one constituent may be a low viscosity component and the other a viscous polymer mixed by passage through an extruder having the overall length comprised of a feed zone 10—20 percent; a transition zone 27—40 percent and a metering zone of 45—60 percent. Within said metering zone there are two to six flight interruptions, said method of mixing polymers producing an extrudate with a coefficient of particle variation of less than 30 percent and said polyblends and low viscosity materials incorporated in polymers being both suitable for piece dyeing when converted into textile articles.

3,596,321
GAUGING OR CALIBRATING DEVICE FOR TUBULAR FILMS

Hartmut Upmeier, Tecklenburg, Germany, assignor to Windmoller & Holscher, Munsterstr, Lengerich, Germany

Filed Oct. 2, 1969, Ser. No. 864,291
Claims priority, application Germany, Oct. 10, 1968, P 18 02 288.3
Int. Cl. B29d *23/00*
U.S. Cl. 18—14 A 10 Claims

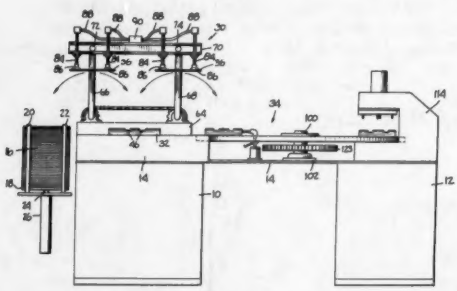


A gauging or calibrating device for tubular films formed by a blowing process comprises a plurality of support rings surrounding the tubular film in a zone where the film is still plastic. Each support ring, which may be divided in one or two places is formed from a curved spindle and a heat-resistant and nonadhesive covering which can rotate on the spindle. The covering can be formed either from a flexible tube mounted on support rollers, or it can be formed by a number of closely spaced individual rollers. The ends of the curved spindle are held in adjustable mounts which permit the diameter of the support ring to be adjusted.

3,596,322
INDEX MECHANISM FOR A PACKAGING MACHINE

Edwin W. Swezey, Hackensack, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Division of Ser. No. 738,972, June 21, 1968, Pat. No. 3,534,524
Filed Mar. 24, 1970, Ser. No. 22,186
Int. Cl. B29c *3/04*; B23q *17/00*
U.S. Cl. 18—20 C 3 Claims

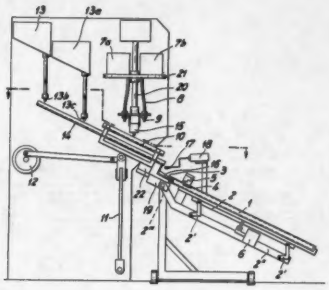


An index mechanism for a packaging machine having a transport mechanism for picking up individual package cards from a stack of cards and transporting the cards to a heating plate. The transport mechanism picks up another individual card from the heating plate and transports it to a forming die on an indexing mechanism. The indexing mechanism of this invention has four stations, the first of which causes synthetic plastic material on the package cards to be deformed into the shape of the cavities in the forming die. In the second station an item is placed in the package and the card folded. In the third station the card is sealed and in the fourth station the package card is removed from the indexing mechanism. The indexing mechanism has a plurality of hydraulic valves which are actuated sequentially to operate the indexing mechanism.

3,596,323
APPARATUS FOR CASTING SYNTHETIC RODS

Walter Patzak, 34 Stifterweg; Alfred Witulski, 19 Priessnitz str., and Wilhelm Muhleisen, 3 Munchner Platz, all of D-8264 Waldkraiburg Bavaria, Germany

Filed Oct. 8, 1968, Ser. No. 765,917
Int. Cl. B29c *5/08*
U.S. Cl. 18—26 R 11 Claims

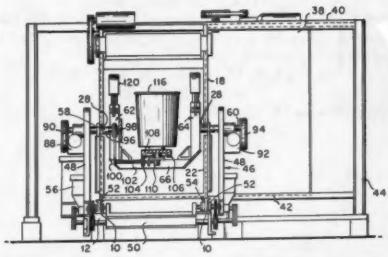


An apparatus for casting synthetic rods having a particular design therein, including providing containers for different plastics, a mixing plate and means for pouring the plastic into casting pipes in a desired pattern.

3,596,324
EXTERIORLY MOVED MOLD SUPPORT FOR CYCLE-OVERLAP ROTATIONAL MOLDING APPARATUS FOR THERMOPLASTIC ARTICLES

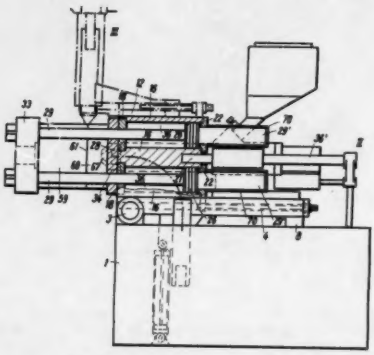
Elliott Bavers, New York, N.Y., assignor to Rotodyne Manufacturing Corporation, Brooklyn, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,300
Int. Cl. B29c *5/04*
U.S. Cl. 18—26 RR 9 Claims



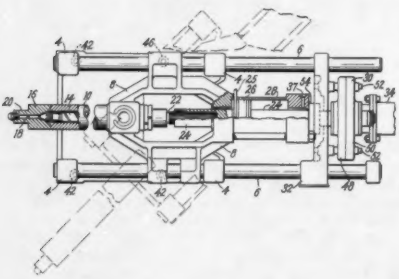
Exteriorly movable mold-supporting means for cycle overlap rotational molding apparatus, consisting of a carriage having spaced movable upright sides, one on the exterior of each side of the apparatus, connected at their lower ends below the apparatus, each having a shaft journaled at its upper end extending into the interior of the apparatus through a continuous gap in the adjacent apparatus wall, and a motor mounted thereon for rotating said shaft, and a U-shaped structure within the apparatus whose two sides are each engaged by one of said shafts, the web of the structure having a platform rotatably mounted thereon for rotation in a plane parallel to said shafts, one of said shafts operatively connected with said platform for rotating the same when said one shaft is rotated, and counterbalancing weights longitudinally adjustably mounted on the sides of the U-shaped structure.

3,596,325
MOLD-CLAMPING UNIT FOR SYNTHETIC MATERIAL PROCESSING APPARATUS
Karl Hehl, 183 Siedlung, 7291 Lossburg, Wurttemberg, Germany
Filed Jan. 21, 1969, Ser. No. 792,571
Claims priority, application Germany, Apr. 26, 1968, P 17 78 414.4
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 LF **12 Claims**



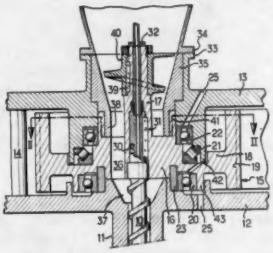
Injection molding apparatus including an injection mold, a synthetic material injecting means and means for clamping two cooperating parts of such mold together. The clamping means is in the form of a formed cylinder block on which a part of the mold is disposed and which encloses the injecting means on at least three sides. The cylinder block has bores which form the cylinders for at least two hydraulic pressing means. Such pressing means serve to move the parts of the mold relative to each other, during a mold-pressing period, by being operably connected to at least one of the mold parts.

3,596,326
INJECTION MACHINES
Rupert E. Annis, Jr., Salem; Robert A. Melloni, Peabody, and Henry L. Wright, Ipswich, all of, Mass., assignors to USM Corporation, Boston, Mass.
Filed Feb. 14, 1969, Ser. No. 799,281
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 SS **2 Claims**



An injection machine including a frame, tie bars mounted on the frame, bracket means slidably mounted on the tie bars, a plasticator mounted on the bracket means, first motive means mounted on the frame for moving the plasticator into position for injecting into a mold assembly, second motive means supported by the bracket means for selectively moving a plasticator screw axially within the plasticator, and third motive means supported by the bracket means for moving the plasticator screw rotatively, drive gear means comprising a portion of the third motive means being so disposed and arranged as to be readily replaceable, and means for readily replacing the plasticator screw, whereby to provide a compact machine having all necessary motive means thereon and suitable for handling several materials under varying conditions.

3,596,327
EXTRUSION MACHINES COMPRISING A VERTICAL BARREL OR CASE
Jacques Andre Germain Dubard, Colombes, France, assignor to Societe Des Etablissements Andouart, Bezons, France
Filed Jan. 21, 1969, Ser. No. 792,687
Claims priority, application France, Jan. 26, 1968, 137,544
Int. Cl. B29f *3/02*
U.S. Cl. 18—12 SV **8 Claims**



An extruding machine having a vertical extrusion screw is provided with a driving pulley keyed to the extrusion screw and housed between two stationary plates, the upper plate having a base for the feed hopper or chute and the lower plate being joined to the upper end part of the case for the extrusion screw. The driving pulley carries, on the hopper side, a feed screw for promoting the feed of material to the extrusion screw below.

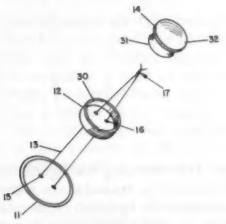
3,596,328
METHOD OF MAKING CATAMENIAL DEVICES
Joseph A. Voss, 1223 Race St., Apt. 902, Denver, Colo.
Division of Ser. No. 744,248, June 24, 1968, continuation-in-part of Ser. No. 477,851, Aug. 6, 1965
Filed Oct. 9, 1969, Ser. No. 871,074
Int. Cl. A61l *15/00*
U.S. Cl. 19—144.5 **2 Claims**

A catamenial tampon is disclosed having rapid initial and high total moisture absorptivities. The tampon is generally cylindrical and has a blunt forward end provided with a forwardly facing, diverging cavity for physically trapping and pooling menstrual fluid. The cavity, which may be in the form of a V-shaped notch, has a width across the forward extremity at least about one quarter of the overall diameter of the tampon. The portions of the tampon defining the cavity are flexible and resilient so that they may be pressed toward one another to facilitate insertion and removal of the tam-

pon. Further, these portions expand forwardly and outwardly during menstrual fluid absorption thereby exposing more internal surface area of the tampon to enhance further absorption of fluid and block egress of the trapped fluid.

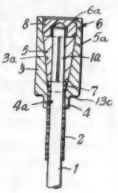
Methods for making the foregoing catamenial tampon are also disclosed. Generally, the tampon is made by providing a strip of cellulosic cotton with a forwardly diverging cavity in the forward end. This may be accomplished by moving a continuous web of cotton material past a cutter device which separates the web into strips having an initial shape and size. Each individual strip is then compressed both radially and longitudinally into a generally cylindrical configuration having the desired final shape and size.

3,596,329
BUTTON ATTACHMENT
Ernestine A. Hoban, 91 Holliston St., Medway, Mass.
Filed Oct. 22, 1968, Ser. No. 769,607
Int. Cl. A44b *1/18*
U.S. Cl. 24—90 **3 Claims**



A kit which eliminate the need for thread in affixing buttons to garments wherein the button is affixed by means of fairly stiff wire and a special receptacle for same, to prevent unwinding and injury to a user. The special receptacle includes a disc with two holes and a peripheral flange on its wall. The wire is passed through holes in the button, fabric, and the holes in the disc and then the wire end are twisted together inside of the receptacle and a cap placed therein.

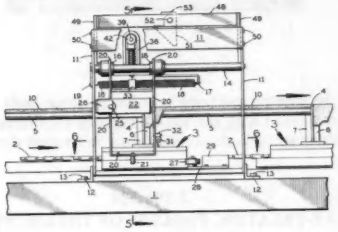
3,596,330
ANCHORS FOR STRUCTURAL TENSILE MEMBERS
Robert Arthur Scott, Richmond; Richard Henry Bryan Winder, Gerrards Cross, and Roy Bruce Miller, Amersham, all of, England, assignors to The Cementation Company Limited, London, England
Filed Oct. 8, 1965, Ser. No. 494,202
Claims priority, application Great Britain, Oct. 13, 1964, 41808/64
Int. Cl. E04c *5/12*; E04b *1/22*
U.S. Cl. 24—114.5 **10 Claims**



An anchor for a grouted structural tensile member of the type coated throughout that part of its stressed length otherwise exposed to aggressive media characterized in that a rigid load-transmitting sleeve provided with at least one external surface disposed transversely to said tensile member is secured by wedging around a stripped or otherwise uncovered length of said member to enclose said stripped length and a small unstripped length at one or both ends of the stripped length and is sealed to the unstripped length or lengths by flexible sealing means so that the complete anchor structure forms a sealed protective and load-transmitting casing around the length of the tensile member which is closed thereby continuous with the coating which covers the remainder of the member.

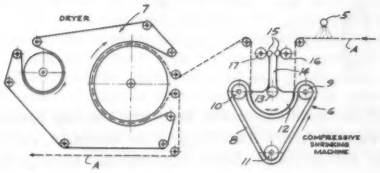
The foregoing abstract is not intended to be a comprehensive discussion of all of the principles, possible modes or applicatios of the invention disclosed in this document and should not be used to interpret the scope of the claims which appear at the end of this specification.

3,596,331
DEVICE FOR PIERCING NAIL HOLES IN MACHINE-MOLDED TILE
Frank A. Gory, and Clarence Peavy, both of Hallandale, Fla., assignors to Gory Industries, Boca Raton, Fla.
Filed Dec. 10, 1969, Ser. No. 883,905
Int. Cl. B28b *5/00*
U.S. Cl. 25—1 R **6 Claims**



A power-driven automatic device for piercing a pair of nail holes in semicured tile successively molded in an automatic tile machine.

3,596,332
OSCILLATING MACHINE FOR SHRINKING AND FINISHING WOVEN TEXTILE FABRICS
Paul N. Winberg, Hempstead, N.Y., assignor to Cluett, Peabody & Co., Inc., Troy, N.Y.
Filed Mar. 3, 1969, Ser. No. 803,536
Int. Cl. D06c *21/00*
U.S. Cl. 26—18.6 **12 Claims**

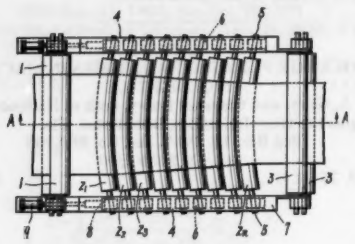


This invention is directed to a machine for compressively longitudinally shrinking a continuously advancing woven textile web and simultaneously ironing one face thereof and includes an endless rubber belt carried on a pair of parallel rolls (one of which is driven) and an idler roll parallel thereto. An oscillatory arcuate segment is interposed between the rolls and displaces the belt toward the idler roll. Preferably, the segment, which may be heated, is oscillated through a small amplitude more rapidly in the machine direction than in the opposite direction.

3,596,333
APPARATUS FOR COMPRESSIVELY SHRINKING WOVEN TEXTILE FABRICS
Motohiro Tsuruta, Kyoto-shi; Hiroshiro Kimura, Uji-shi; Akio Koshimo, Uji-shi; Hirohisa Nara, Uji-shi; Tokuji Goto, Nari-shi, and Kunio Amemiya, Uji-shi, all of, Japan, assignors to Nippon Rayon Kabushiki Kaisha (Nippon Rayon Co. Ltd.), Uji-shi, Kyoto-fu, Japan
Continuation-in-part of Ser. No. 701,701, Jan. 30, 1968, abandoned
Filed Sept. 8, 1969, Ser. No. 855,863
Claims priority, application Japan, Jan. 30, 1967, 42/5996
Int. Cl. D06c *21/00*
U.S. Cl. 26—18.6 **6 Claims**

The present invention relates to a process and apparatus for treating a woven textile fabric, which comprises passing

the fabric in its warp direction between at least a pair of rotatable cylindrical elastic rollers, whose surfaces make tight contact with each other, by compressing the rollers to increase its central portions relative to their ends and whose axes are curved with the same radius of curvature and in the same plane so as to shrink the fabric in its weft direction.



3,596,334

HEAT-TREATING PROCESS OF THERMOPLASTIC FIBERS

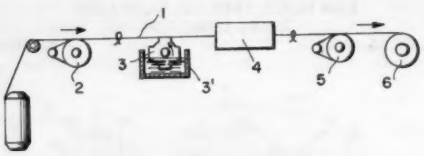
Akira Kobayashi; Atsushi Sugiyama; Hideo Watase; Tadashi Hirakawa, and Hiroki Tamura, all of Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 21, 1969, Ser. No. 809,210

Claims priority, application Japan, Mar. 23, 1968, Oct. 23, 1968, Feb. 8, 1969, 43/18823;43/77274;44/9535

Int. Cl. D02q *1/00*

U.S. Cl. 28—72.1 **4 Claims**



This invention relates to a heat-treating process of thermoplastic fibers. According to the invention, prior to passing the thermoplastic fibers continuously through a high-temperature atmosphere maintained above the melting point of the fibers at a high speed, a liquid having a relatively large latent heat of vaporization or specific heat which is inert to the fibers is nonuniformly applied to the fiber surfaces. Thus pretreated fibers exhibit, after the aforesaid heat treatment, nonuniform dyeability (this property is expressed as "different dyeability" in the specification) and/or nonuniformly crimped state. Also conjugate fibers having nonuniform latent crimpability can be prepared in accordance with the subject process.

3,596,335

METHOD FOR MAKING A MOSAIC OF ULTRASONIC TRANSDUCERS ADAPTED FOR USE WITH IMAGE CONVERSION TUBES

Grant S. Bennett, San Mateo, Calif., assignor to Litton Precision Products, Inc., San Carlos, Calif.

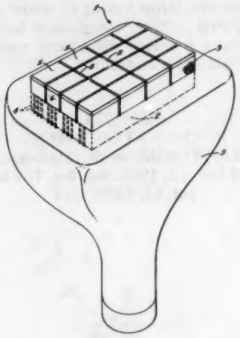
Division of Ser. No. 809,683, Mar. 24, 1969

Filed Mar. 24, 1969, Ser. No. 809,679

Int. Cl. B01j *17/00;* **H04r** *17/00*

U.S. Cl. 29—25.35 **4 Claims**

A mosaic of ultrasonic transducers is assembled and manufactured and adapted to the faceplate of an image conversion tube in a simple and expeditious procedure: a layer of piezoelectric material is joined to a layer of conductive syntactic foam preferably this is accomplished with a conductive epoxy material. The remaining side of the syntactic foam layer is then joined, suitably with conductive epoxy adhesive material, to the wire fiber optic faceplate of an image conversion tube. A plurality of spaced parallel slots are formed through the two layers of material and to a depth just into the tube faceplate, and a plurality of spaced parallel slots are formed perpendicular to the aforementioned slots in the piezoelectric and foam layers also to a depth just into the tube faceplate. The resulting configuration is a checkerboard mosaic of piezoelectric transducers which are spaced from each other, acoustically isolated from one another, and electrically coupled to individual wires in the tube faceplate. A novel result of this process permits substitution of other transducers to the faceplate of a conversion tube by simply scrapping off the old transducer and reforming the new mosaic on the tube faceplate in the same manner as described.



3,596,336

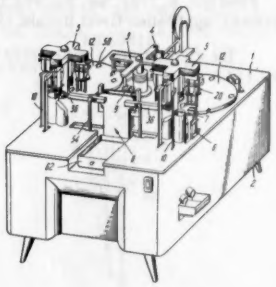
MACHINE FOR PRODUCING MICA CAPACITOR PILES WITH FOIL LEADS

Anatoly Nikolaevich Barakin, Pavlovsky Posad, Trudovaya ul., 2/2, kv.53, and Vladimir Alexandrovich Maltsev, Pavlovsky Posad, Volodarskogo ul., 93, kv.46, both of Moskovskaya Obl., U.S.S.R.

Filed Oct. 28, 1968, Ser. No. 771,127

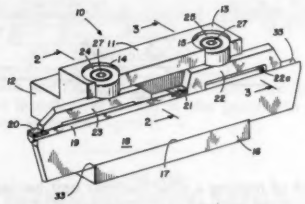
Int. Cl. H01g *13/00*

U.S. Cl. 29—25.42 **4 Claims**



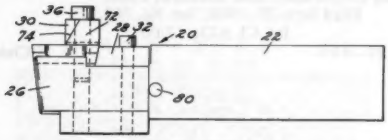
A machine is provided for producing mica capacitor piles and comprises a plurality of transfer heads which periodically turn, lift, and drop for transferring capacitor piles between a plurality of stations where the piles have operations performed thereon. At a first station is located a mechanism for bending and additional pressing of the foil leads of the piles the mechanism alternatively cooperating with grippers of the transfer heads. At a subsequent station are dielectric strength monitors of the capacitor piles for detecting defective capacitor piles and causing removal of the defective piles from the grippers of the transfer heads. At a further station is a mechanism which receives the piles and effects a dipping of the piles into an impregnant.

3,596,337
UNIVERSAL CUTOFF AND GROOVING TOOL
Donald W. Arnold, Fort Worth; Orien M. Knight, Hurst, and John A. Nelson, Fort Worth, all of, Tex., assignors to United Tool Corporation, Eieless, Tex.
Filed Feb. 28, 1969, Ser. No. 803,191
Int. Cl. B26d 1/00
U.S. Cl 29—96 7 Claims



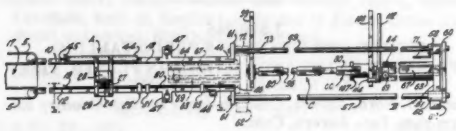
A toolholder for positioning lathe-type cutoff and grooving tools to cut workpieces located on either the left-hand or the right-hand side of the tool and either above or below the tool. The toolholder includes a pair of identical J-clamps located on the left-hand and right-hand sides of the holder for selectively securing a cutoff and grooving tool on either side of the holder. The J-clamps are adapted for adjustment from either the top or the bottom of the holder so that the holder can be used either upright or upside down.

3,596,338
TOOL AND HOLDER THEREFOR
Edward M. Meehan, Southington, and William J. Morrissey, Sr., Naugatuck, both of, Conn., assignors to Fansteel Inc., North Chicago, Ill.
Filed July 7, 1969, Ser. No. 839,262
Int. Cl. B26d 1/00
U.S. Cl. 29—96 3 Claims



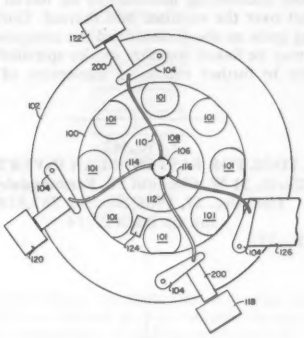
An improved tool for use on lathes and other turning, tracing, or cutoff machinery of known construction which includes a side plate anvil held in place by a clamp which serves also as an adjustable backup for a cutting insert mounted on the anvil, and a clamping block which cooperates with the adjustable element for locking the anvil side plate in position as well as locking the cutting insert in place on the anvil.

3,596,339
METHOD AND APPARATUS FOR HANDLING COIL COMPRESSION
Jack G. Turner, Jr., 1050 Broad Street, and Christopher Turner, Jr., 93 W. Milton Avenue, both of Rahway, N.J.
Filed Sept. 13, 1968, Ser. No. 759,547
Int. Cl. B23p 13/00; B23q 7/10; B23b 19/04
U.S. Cl. 29—173 31 Claims



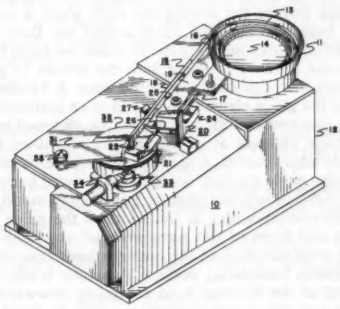
A method and apparatus for handling coil compression springs in the manufacture of spring assemblies for use in mattresses, cushions and the like. The apparatus arranges coil springs in a rigidly held oriented position from which they are picked up by a movable magazine. The loaded magazine then scans a plurality of coil snatching heads which withdraw individual oriented coils from the magazine during the magazine movement and present them in operative relationship for a subsequent assembly operation.

3,596,340
COMPONENT ASSEMBLY APPARATUS
Paul V. Costa, Peabody, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 20, 1969, Ser. No. 867,469
Int. Cl. B23p 19/04; B23q 7/10
U.S. Cl. 29—208 R 25 Claims



Apparatus for the assembly of components which require a small temporary rotation for proper assembly (e.g., an adjustment lever and guide plate of a variable geometry mechanism for a razor blade magazine) comprising a turret having, at symmetrically spaced fixed positions about its periphery, eight nest elements thereon; a first machine station at which clamping jaws of the nest element are opened and into which are deposited by an operative head at that station an adjustment lever; a second machine station at which a magazine is deposited over the adjustment lever by an operative head; a third station at which an operative head receives a guide plate from a feeder mechanism, transfers the guide plate to the nest element, and engages the guide plate with a protruding portion of the adjustment lever by means of a small (8°) temporary rotation of the operative head and guide plate; a plurality of machine stations which perform tests to determine the structural soundness of the magazine and the proper assembly of the guide plate; and a final machine station for removal of the assembled magazine from the nest element.

3,596,341
SPLIT RING ASSEMBLY MACHINE
Edward C. Herkner, 4407 Plum, Boise, Idaho
Filed Sept. 29, 1969, Ser. No. 864,271
Int. Cl. B23g 7/02
U.S. Cl. 29—211 5 Claims



The "split" ring assembly machine of the present invention comprises a ring feed mechanism operable to feed one

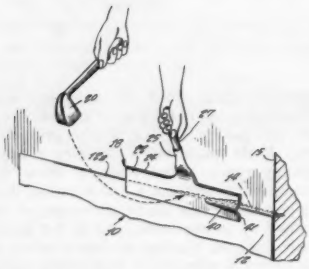
spiralled wire "split" ring one at a time to the operating assemblies of the machine; a "split" ring placing means operable to place a "split" ring from the feed mechanism into operative position; a "split" ring holding means operable to hold a "split" ring placed in operative position by the placing means while the ring is being opened to receive other components and accessories to be linked together by the ring, a knifelike means operable to open a "split" ring on the holding means; and a spindle means operable to cause the ring to be turned on the ring holding means in response to rotation of the spindle means and to be opened by the knifelike means in engagement with the ring at which time components and accessories intended to be linked by the ring may be put over the terminal end thereof. During the next succeeding cycle as above described the components and accessories may be linked together on the spiralled "split" ring in response to further rotational movement of the spindle means.

3,596,342

GUIDE TOOL FOR FASTENING AN INVERTED BASE

Erich Willfurth, 31 W. Chestnut St., Farmingdale, N.Y.

Filed Dec. 27, 1968, Ser. No. 787,510
Int. Cl. B25b *27/14*
U.S. Cl. 29—275 **4 Claims**



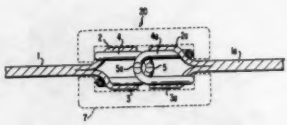
For use with an inverted base provided with upper and lower rows of projecting teeth adapted to be driven into a wall panel and floor at the base of the wall with the inverted base located in a recess inwardly of the wall surface, a transparent substantially rigid guide element of elongated form and narrow width and being substantially flat for the major portion of its length. Provided at either end of the guide element is a longitudinal end groove of inwardly tapering formation having its outer end widest at the terminal edge of the guide element and merging at its inner narrow end into the flat body of the guide element, the wall of the groove extending outwardly from the outer surface of the guide element. The flat elongated portion of the guide element provides a hammering surface for driving the teeth along a row of the inverted base into the wall panel and/or the floor with the guide element movable along the row and the teeth forwardly of the guide element coacting with the groove to guide the same along the edge of the inverted base. A handle may be affixed to the guide element to extend at an inclination either from the grooved end thereof or may be disposed transverse to the guide element at its center and extending from the upper side edge thereof. A special half-hammer is utilized for use with the guide element constituting a metal hammer head having a substantially rectangular bottom hammering surface of a width corresponding to the width of the guide element, the sides and front of the hammer head arcuately tapering upwards, with the back of the hammer head flat and normal to the bottom hammering surface. A handle is affixed to the upper end of the hammer head extending rearwardly of the back flat wall, the handle tapering towards its fixed end with its larger thickness arranged to be conveniently held in the hand.

3,596,343

METHOD OF MAKING A SLIDE FASTENER UNIT

Wilhelm Uhrig, Mannesmann Strasse 11, Wuppertal-Elberfeld, Germany

Division of Ser. No. 698,203, Jan. 16, 1968, Pat. No. 3,551,962
Filed June 12, 1970, Ser No. 45,715
Int. Cl. B23p *15/00;* **B21f** *45/18*
U.S. Cl. 29—410 **6 Claims**



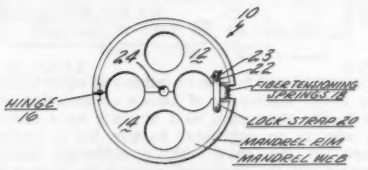
A method of making a slide fastener unit having two rows of links which are secured to the two halves of the supporting tape, each of the halves being a Y-tape with the upper and lower ends of each half partly covering the row of links at each side so that adjacent upper and lower ends form parallel longitudinal bands exposing to view the middle of the rows of links at each side where these rows come together and the individual loops of the rows of links remote from the center. These rows of links are formed by weaving a continuous length of heavy duty thermoplastic synthetic monofilament as a warp into the two short arms of the Y-tape to form loops and links in a single operation. The loops and the links which are initially in the same plane are heat deformed between the free ends of the arms of the Y-tape to form U-shaped links facing towards the edge of the tape while the loops are compression set at the part of the arm remote from the edge to form a guide for the fastener slide.

3,596,344

METHOD OF FABRICATING FIBER-REINFORCED ARTICLES

Kenneth G. Kreider, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 27, 1968, Ser. No. 763,279
Int. Cl. B23p *17/00*
U.S. Cl. 29—419 **7 Claims**



An improved process of fabricating a multilayer fiber-reinforced metal matrix composite by winding a filament on a spring-loaded mandrel, preheating the mandrel, plasma arc spraying metal matrix material in coalescent form onto the filament windings to form a composite layer, forming additional composite layers by repeating the steps of winding, preheating and spraying and subjecting the resulting multilayer composite to heat and pressure.

3,596,345

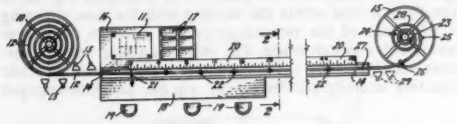
METHOD AND MEANS FOR PREINSTALLING SPRINKLER HEADS AND FITTINGS IN PLASTIC PIPE FOR SPRINKLER SYSTEMS

Everett O. Nord, Aurora, Colo., assignor to High Country Enterprises, Inc., Aurora, Colo.

Filed Oct. 13, 1969, Ser. No. 865,905
Int. Cl. B23p *19/00*
U.S. Cl. 29—429 **8 Claims**

Plastic pipe is thermally softened and withdrawn from a supply roll and impelled through a straight elongated guide trough provided with a measurement scale. Sprinkler heads

and pipe fittings are fabricated in the trough-contained pipe at points indicated on the measurement scale which are determined by study of a presubmitted plan. The pipe with its



installed heads and fittings in place is reeled and delivered as a unit to an installer for burial in the ground to provide a complete lawn sprinkling system.

3,596,346

METHOD FOR JOINING METALS

Stanley G. Berkley, Colchester; Irwin Segalman, Bloomfield, and Perry Goldberg, West Hartford, all of, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 2, 1969, Ser. No. 812,858

Int. Cl. B23k *31/02, 35/38*

U.S. Cl. 29—494 **8 Claims**

A process for joining metals is described wherein the metals are concurrently coated and diffusion bonded in a dry impregnating pack at a temperature of 2,000°—2,550° F.

3,596,347

METHOD OF MAKING INSULATED GATE FIELD EFFECT TRANSISTORS USING ION IMPLANTATION

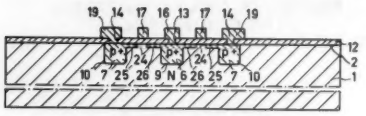
Julian Robert Anthony Beale, and John Martin Shannon, both of Surrey, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 19, 1968, Ser. No. 753,449

Claims priority, application Great Britain, Aug. 18, 1967, 38144/67

Int. Cl. B01j *17/00;* **H01g** *13/00*

U.S. Cl. 29—571 **10 Claims**



A method of making an insulated gate field transistor is described. Source and drain contact regions are first formed in a semiconductor, after which a metal ion mask is provided over the body to form metal contacts to the source and drain regions and a metal gate. Following this, ions are implanted in the semiconductor through an insulating layer covering the semiconductor so as to extend the source and drain regions to the edge of the metal gate which serves as a mask to define the desired channel length. Preferably the metal layer which provides the source and drain contacts and the gate is grounded to the ion-generating equipment to prevent charging of the insulating layer.

3,596,348

THYRISTORS AND OTHER SEMICONDUCTOR DEVICES

Michael Albert Stacey, Solihull, and Michael Searle, Sutton Coldfield, both of, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

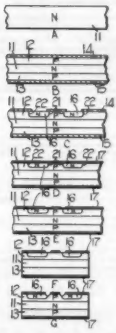
Filed Mar. 4, 1969, Ser. No. 804,083

Claims priority, application Great Britain, Mar. 15, 1968, 10608/68

Int. Cl. B01j *17/00;* **H01l** *7/66*

U.S. Cl. 29—583 **6 Claims**

Thyristors are produced starting with an N-type wafer and forming P-type layers on opposite sides to act as the anodes and gates of the thyristors. N-type layers acting as the cathodes are then produced in or on the plate layers, after which the wafer is coated with nickel and then with gold, and gold is removed from at least part of the portion of each gate-cathode junction which is exposed in the surface of the wafer. The wafer is then divided into chips by cracking or sawing, and the cracked or sawn junctions are then improved



by etching, the etching at the same time removing the nickel from the junctions exposed by the removal of the gold. A similar process is applied to manufacture transistors.

3,596,349

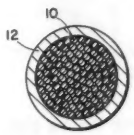
METHOD OF FORMING A SUPERCONDUCTING MULTISTRAND CONDUCTOR

Roger W. Boom, Woodland Hills; Luther Carlton Salter, Jr., Los Angeles, and James B. Vetrano, Woodland Hills, all of, Calif., assignors to North American Rockwell Corporation

Division of Ser. No. 369,205, May 21, 1964, abandoned. May 2, 1968, Ser. No. 763,437

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 **5 Claims**



A method of fabricating a unitary superconducting multistrand conductor. The method includes coating a plurality of fine superconducting wires with a normal metal having ductility characteristics similar with those of the superconducting metal, assembling the coated wires in a close-packed array, and swagging the array so that the metal coatings of the wires form a conductive continuous matrix in which the wires are solidly embedded.

3,596,350

PROCESS FOR THE PRODUCTION OF PERMANENT MAGNETS FROM ANISOTROPIC PERMANENT MAGNET POWDER

Erich Steingroever, Bonn, Germany, assignor to Magnetfabrik Bonn GmbH. vorm. Gewerkschaft, Windhorst, Postfach, Germany

Filed Sept. 11, 1968, Ser. No. 758,970

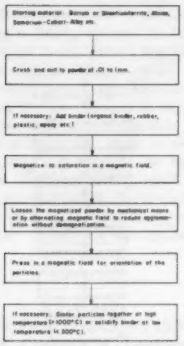
Claims priority, application Germany, May 8, 1968, P 17 64 279.4

Int. Cl. H01f *7/06*

U.S. Cl. 29—608 **14 Claims**

A process for producing permanent magnets from an isotropic permanent magnet powder which is compressed by

means of a magnetic field but which is first exposed to a magnetic field and then loosened whereby the particles of the

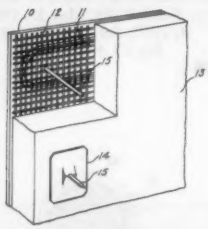

Starting material: Barium or Strontiumferrite, Alnico, Samarium-Cobalt- Alloy etc.
Crush and mill to powder of .01 to 1 mm.
If necessary: Add binder (organic binder, rubber, plastic, epoxy etc.)
Magnetize to saturation in a magnetic field.
Loosen the magnetized powder by mechanical means or by alternating magnetic field to reduce agglomeration without demagnetization.
Press in a magnetic field for orientation of the particles.
If necessary: Sinter particles together at high temperature (1000°C) or suitably binder at low temperature (< 300°C).

magnetic powder are particularly adaptable for easy alignment in the magnetic field during compression.

3,596,351
METHOD OF MAKING HEATED CONCRETE FORM ASSEMBLY

Warren D. Tilton, Englewood; Kenneth J. Champney, Idledale, and Roy M. Woodard, Broomfield, all of, Colo., assignors to Concrete Curing Engineers, Incorporated, Denver, Colo.

Filed July 16, 1969, Ser. No. 842,249
Int. Cl. H05b *3/00*
U.S. Cl. 29—611 **4 Claims**



A method for attaching heating grids and thermal insulation to metal concrete forms comprises the welding of protruding spikes or pins at a multiplicity of points on the form placing a flexible backing having heating elements bonded thereto over the pins and against the form, pressing a rigid plastic insulating sheet over the pins and against the backing and locking the insulation in position against the form by applying friction locknuts on the pins and against the plastic sheet. A flexible plastic layer or sheet may be employed between the grid and the rigid sheet for distributing the pressure and minimizing air passages. The heated concrete form assembly provides for the continuous pressing of the heater elements against the metal of the form and when including a flexible plastic layer between the rigid plastic and the form minimizes the effect of bumps or other irregularities on the surface of the metal form.

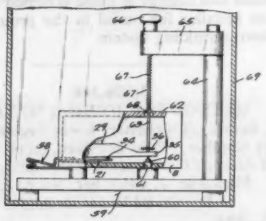
3,596,352
METHOD OF CALIBRATING BIMETALLIC ELEMENTS IN A THERMAL OVERLOAD SWITCH

Eduard W. Isler, Cleveland, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Apr. 16, 1968, Ser. No. 721,755
Int. Cl. H01h *11/00, 11/02, 65/00*
U.S. Cl. 29—622 **3 Claims**

This disclosure relates to a thermal bimetal operator for a multiple line control switch unit and to the method of construction.

A switch housing is provided with a series of small cavities in one end wall. A bimetal strip includes an L-shaped tab which projects into the recess. A thermoset resin is disposed within the respective cavities and the bimetal strips are resiliently clamped with the outer end of the bimetal element disposed outwardly of a set position. A U-shaped trip bar is pivotally mounted within the housing with the base engaging the free ends of the bimetal strips and with an outer arm aligned with a switch blade. The switch is a snap action overcenter variety having the compensating switch arm or blade projecting laterally parallel to the trip bar and interengaged

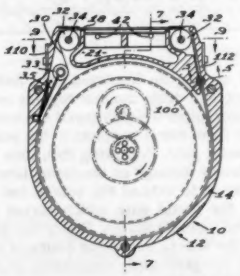


by the depending arm of the trip bar. The switch includes an adjustment screw connected to a pivot support to control the snap action position. The assembly is placed in a fixture having a support pin extending through a housing opening to support the outer arm and an adjustable tool spring loaded rod extending through an opposite housing opening into engagement with the switch blade to position the components including the bimetal strips. the fixture and assembly are placed in a curing oven which is raised to the curing temperature. Prior to the setting of the resin and after the operating temperature is established, the switch adjustment is made. The curing step is then completed.

3,596,353
ELECTRIC SHAVER

Ray E. Day, 340 Lakeland, Grosse Pointe, Mich.

Filed Nov. 19, 1968, Ser. No. 776,918
Int. Cl. B26b *19/14*
U.S. Cl. 30—43.6 **10 Claims**



The electric shaver of this invention comprises a housing having a slotted head, and drive means for moving an endless cutting band within the housing continuously in one direction across the head to cut whiskers projecting through the slots.

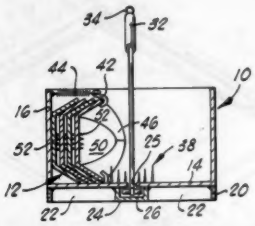
3,596,354
WATERMELON-HANDLING UTENSIL

Ralph W. Emerson, 116 N. Lee, Cordell, Okla.

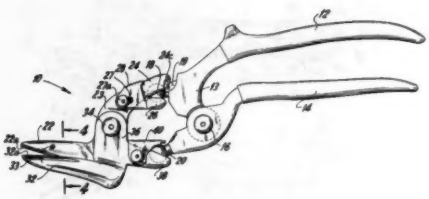
Filed Oct. 22, 1969, Ser. No. 868,373
Int. Cl. B26b *11/00*
U.S. Cl. 30—124 **11 Claims**

A watermelon-cutting and -serving utensil which includes a watermelon-containing housing having sidewalls and a bottom. Upwardly projecting tines are secured to the bottom for retaining a whole, uncut watermelon in the housing. An elongated cutting device has one of its ends pivotally secured in a

track extending across the central portion of the bottom of the housing between the tines. Retaining clips are provided on the bottom of the housing to one side of the tines for cooperation with a spring-biased restraining clip secured to the upper edge of one of the sidewalls of the housing in holding in place a plurality of nested serving trays which are utilized in serving slices of the melon. Each serving tray is provided with a plurality of small tines in the bottom thereof, and with an opening for permitting the juice of the melon to drain from the tray without simultaneously discharging seeds from the tray.



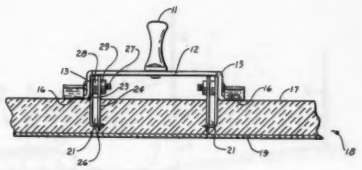
3,596,355
SWIVEL SHEAR
Rudolph J. Wertepny, Sr., 804 Linden Ave., Elizabeth, N.J.
Filed Dec. 13, 1968, Ser. No. 783,498
Int. Cl. B26b *13/26*
U.S. Cl. 30—252 **10 Claims**



A shear implement having a movement based on either of two forms of compound levers, the intermediate pivotal connections of which are arranged to swivel by one or two ball joints. The ball joint is adapted for selective pivotal movement in azimuth, that is, laterally to the plane of the shear action and to allow for free pivotal movement about a horizontal axis. The swivel effect of the ball-joint connection connection provides for shearing action even with the blades swiveled as much as substantially 90° from the pivoting plane of the blades. A manually operated form includes two ball joints and a detent for holding the device to a plurality of angular positions. An electric-motor-operated form includes one ball joint and an adjustable swivel to allow for selected positions at any desired angle.

3,596,356
GROOVING KNIFE ASSEMBLY
John E. O'Neal, Indianapolis, Ind., assignor to John J. Cotton, Indianapolis, Ind., a part interest
Filed July 11, 1968, Ser. No. 744,013
Int. Cl. B26b *3/04*
U.S. Cl. 30—279 **3 Claims**

A blade holder with parallel horizontally spaced feet for support on a board surface, with inverted channel-shaped bridge portion between the feet and a handle atop the bridge portion. Two pairs of knife blades, each pair removably secured to the bridge portion adjacent one of the feet, and including two generally triangular blades substantially identical except for a horizontally turned tip portion of one blade intercepting the path of the other, the blades of each pair being closely horizontally spaced the width of the desired groove to be cut in the board.



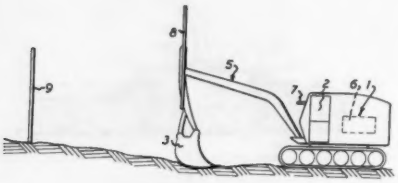
3,596,357
METHOD FOR PERFORMING ORTHODONTIC LIGATION OF THE BANDS AND THE ARCHWIRE APPLIED TO A SERIES OF TEETH, AND AN ORTHODONTIC LIGATION BRACE AND A PRE-SHAPED LIGATION WIRE PIECE FOR USE IN SAID METHOD
Takeshi Matsumoto, 27-5, Hakusan Ichome Bunkyo-ku, Tokyo, 113, Japan
Filed Mar. 3, 1969, Ser. No. 803,880
Claims priority, application Japan, Nov. 14, 1968, 43/82872
Int. Cl. A61c *7/00*
U.S. Cl. 32—66 **7 Claims**

Orthodontic ligating operation is conducted with a greatly increased efficiency and economy by the use of a preshaped ligation wire piece having a forward loop section, an adjacent intermediate widened section and a rodlike twisted end portion extending from said intermediate section, and by having said end portion held firmly between the grasping arms of a chuck means contained in a pencillike orthodontic ligation brace and adapted to be closed by a chuck closing and opening means provided in said brace, then hooking the brackets of the selected band and an archwire which have been already applied to a tooth, thereafter twisting up the wire piece by turning said brace until said brackets and archwire are firmly fixed together by said loop, and then opening said arms of the chuck to release the end portion of the fixed wire piece therefrom.

3,596,358
ARRANGEMENTS IN EARTH MOVING MACHINES
Karl Uno Einar Andersson, Oxelosund, Sweden, assignor to Eric Reinhold Gustafsson, Malmo, Sweden
Filed Apr. 14, 1969, Ser. No. 816,007
Int. Cl. G01c *5/00, 15/00*
U.S. Cl. 33—46 **3 Claims**

An arrangement in excavators, bulldozers and like machines for determining the depth in the ground of an

earthmoving instrumentality consists of a levelling instrument located in the vicinity of the driver's seat, a levelling staff on

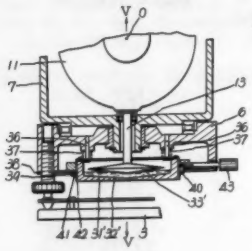


the earth moving instrumentality, and an optional number of panels to be set up in the terrain.

3,596,359
MERIDIAN DETECTOR

Michio Fukano, Yokohama-shi, Japan, assignor to Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan

Filed Dec. 17, 1968, Ser. No. 784,321
Claims priority, application Japan, July 9, 1968, 43/48,038
Int. Cl. G01c *19/38*
U.S. Cl. 33—72 **1 Claim**



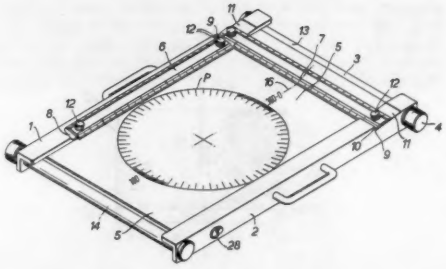
A device for determining the position of a meridian which includes a gyroscope mounted on a horizontal axis and which is supported so that it tends to point north. The gyroscope is suspended on a suspension wire and the torque in the suspension wire is balanced with the north-seeking action of the gyro rotor. The torsion in the suspension wire is removed by rotating the gyro case and thus aligning the spin axis of the gyro with true north. A disc is attached to the case of the gyroscope and is immersed in a viscous liquid so as to damp the north-seeking action of the gyroscope. The elevation of the container for the viscous liquid is adjustable to vary the degree of immersion of the disc, which is downwardly tapered so as to vary the damping torque with the degree of immersion.

3,596,360
APPLIANCE FOR USE IN SURVEYING

David J. Franklin, The Maisonette, Yenna, Wolfs Row, Limpsfield, Oxted, Surrey, England

Filed July 29, 1969, Ser. No. 845,796
Claims priority, application Great Britain, Aug. 1, 1968, 36,856/68
Int. Cl. B43l *5/00*
U.S. Cl. 33—76 **4 Claims**

An appliance for use in surveying, comprising a board or platen, spaced parallel rollers form one to the other of which a roll of drawing material may be wound so that a section thereof is supported by the board or platen, and longitudinal and transverse scaled rules under with the material may be displaced on the board or platen so that a scaled plan of the site surveyed can be plotted on the material in the field. The rules may each have a flat face and an opposite face bevelled and the flat faces supported by inclined or bevelled faces of a frame which supports the rollers so as to bring the scaled edges of the rules in close relationship with the board or platen and in the same plane while permitting travel of the

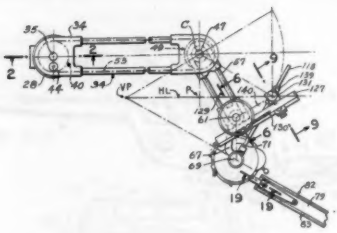


material under the transverse rule marginally under the longitudinal rule.

3,596,361
PARALLEL AND PERSPECTIVE DRAWING DEVICE WITH ANGULAR SETTING MEANS

Igor A. Pirogow, Georgetown Road, Erieville, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,747
Int. Cl. B43l *13/14*
U.S. Cl. 33—77 **23 Claims**



A drawing device is described which is convertable to and from a perspective drawing device and a parallel drawing device by which a move positive and convenient means is provided for drawing angularly directed parallel lines. In addition this setting may be made without changing the perspective setting. Also an improved construction is provided for the control pivot means by which the position of the vanishing point for perspective drawing is selected.

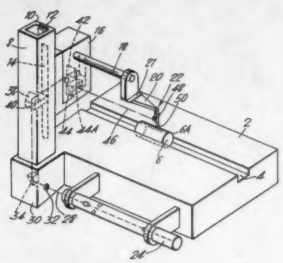
3,596,362
SURFACE MEASURING APPARATUS

Richard Edmund Reason, Market Harborough, England, assignor to The Rand Organization Limited, London, England

Filed Dec. 16, 1968, Ser. No. 783,995
Claims priority, application Great Britain, Dec. 18, 1967, 57387/67
Int. Cl. G01b *11/00, 15/00*
U.S. Cl. 33—174 **23 Claims**

The profile of a surface is tested automatically by directing a parallel reference beam of light substantially parallel to the surface on to beam displacement means, such as a reflecting prism, carried by a surface-engaging stylus, so that a measuring beam is produced which is displaced relative to the reference beam by an amount proportional to the stylus

movement. Detection means, for example a differential photoelectric sensor, are used to indicate change in said displacement and thereby provide an indication of the surface profile.

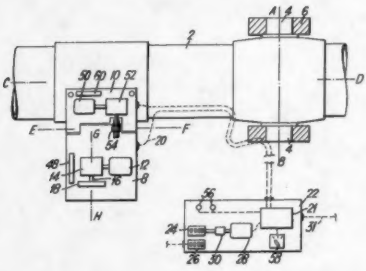


3,596,363

EQUIPMENT FOR AIMING GUNS OR OTHER APPARATUS IN ELEVATION

Allan Maurice Squire, Harpenden, and Peter Duncan Morris, Knebworth, both of, England, assignors to British Aircraft Corporation Limited, London, England

Filed Oct. 9, 1968, Ser. No. 766,218
Claims priority, application Great Britain, Oct. 13, 1967, 46892/67
Int. Cl. G01c 9/06
U.S. Cl. 33—206 D 5 Claims



An apparatus for determining a given angular relationship to the gravitational vertical. A saddle is provided which is attached to the object and incorporates an electrically indicating tilt-sensitive device. A mounting with two tilt-sensitive devices is pivotally connected to the saddle. A number of electric motors are arranged to move the tilt-sensitive devices relative to the mounting to produce an electrical signal indicative of the angular position of the object. A transducer is connected to receive the signal and to indicate the angle of elevation of the object. The tilt-sensitive device can comprise a curve tube containing an electrolyte and a bubble of air, which is incorporated into a bridge circuit to indicate the change in the conductivity which occurs when the tilt-sensitive devices are removed from the horizontal plane.

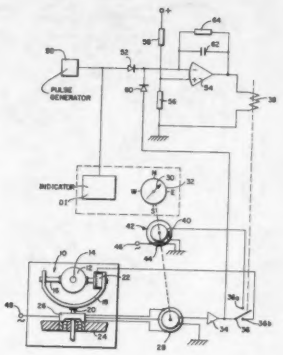
3,596,364

ARRANGEMENT FOR VEHICLE-NAVIGATING SYSTEM

Klas Rudolf Wiklund, Lahall, Sweden, assignor to Aga Aktiebolag, Lindingo, Sweden

Filed Mar. 27, 1969, Ser. No. 810,958
Claims priority, application Sweden, Mar. 27, 1968, 4,059/1968
Int. Cl. G01c 19/32, 19/34, 23/00
U.S. Cl. 33—204 10 Claims

An arrangement for use in a navigating system for a vehicle includes a directional gyro, a heading indicator responsive to the gyro, and a generator for generating a signal during the movement of the vehicle. During movement of the vehicle the reading of the heading indicator is determined by a signal corresponding to the position of the gyro, under the control of a relay responsive to the presence of the generator signal. While the vehicle is stationary this relay switches the small signal due to gyro draft to cause energization of a torque motor which locks the gyro in a position corresponding to the reading of the heading indicator by nulling the drift.

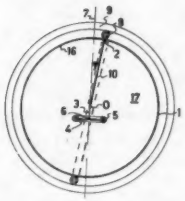


3,596,365

INCLINATION-MEASURING DEVICE

Cornelis M. Verhagen, Heemstede, Netherlands, assignor to Datawell N.V., Haarlem, Netherlands

Filed Aug. 26, 1969, Ser. No. 853,140
Claims priority, application Netherlands, Aug. 27, 1968, 68,12205
Int. Cl. G01c 15/10
U.S. Cl. 33—216 5 Claims



A device for measuring deviations from vertical comprising a spherical liquid-filled container with a pendulous coil supported by a thin thread conduct or from a fixed point on the interior of the sphere and having a density almost equally that of the liquid, and a pair of mutually perpendicular inductance coils concentrically mounted on the exterior of the sphere for monitering the magnitude and direction of the deviation from vertical of the pendulous member.

3,596,366

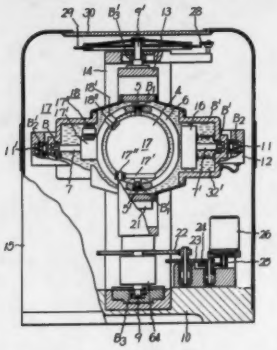
GYROSCOPIC INSTRUMENT

Shin-ichi Kawada, Yokohama-shi, Japan, assignor to Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan

Filed Jan. 2, 1968, Ser. No. 695,127
Claims priority, application Japan, Jan. 13, 1967, 42/2649
Int. Cl. G01c 19/38
U.S. Cl. 33—226 6 Claims

A gyroscopic instrument having a gyro case including a gyro therein and supported with three degrees of freedom

and means for applying a control torque to the gyro about a substantially horizontal axis across the gyro-spin axis at right angles thereto in response to a differentiated value of the inclination of the gyro-spin axis.

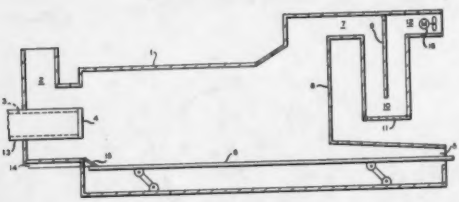


3,596,367

PROCESS AND APPARATUS FOR DRYING, COOLING, AND CONVEYING EXTRUDATE

A. Ralph Crandall, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed July 25, 1969, Ser. No. 844,905
Int. Cl. F26b *7/00*
U.S. Cl. 34—17 **8 Claims**



Hot, moist extrudate is discharged into an envelope of cocurrently moving gas which is maintained in a flash-drying zone for cooling, drying and uniform movement of the extrudate away from the point of discharge; also, the escape of vapors and fines is effectively controlled by providing a differential pressure across said zone.

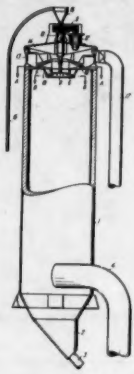
3,596,368

ARRANGEMENT FOR PREHEATING OF PULVERULENT MATERIALS PARTICULARLY OF CEMENT RAW MATERIAL

Zdenek Zacpal, Horni Mostenice, and Petr Nemecek, Prerov, both of, Czechoslovakia, assignors to Prerovske strojurny, narodni podnik, Prerov, Czechoslovakia

Filed Nov. 21, 1969, Ser. No. 878,754
Int. Cl. F26b *17/14*; **F27b** *15/12*
U.S. Cl. 34—57 **5 Claims**

A shaft heat exchanger for pulverulent materials, with hot gases supplied at the bottom of the shaft and with the material to be preheated supplied at the top, is provided at the top of the shaft with a fan, serving simultaneously for generating an upward draft of the gases and for separating of particles of the preheated material entrained by the upstreaming gases. The material is supplied through the hollow shaft of said fan and is dropped on a distributing disc forming a unit with the fan wheel.

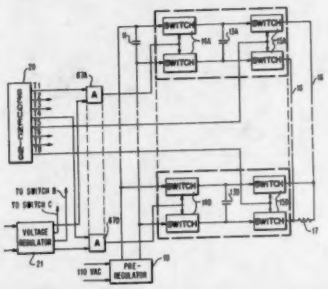


3,596,369

TRANSFORMERLESS POWER SUPPLY WITH LINE TO LOAD ISOLATION

Jack A. Dickerson, Raleigh, N.C., and Gerald H. Ottaway, Pleasant Valley, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,023
Int. Cl. H02m *7/12*
U.S. Cl. 321—43 **7 Claims**



A transformerless power supply is disclosed in which a source capacitor has its charge maintained at a fraction of the AC supply voltage and a plurality of sink capacitors are sequentially switched between a charging connection to the source capacitor and a discharging connection to a load circuit. The load circuit is isolated from the line at all times to maintain safety protection. The use of a comparatively high switching speed will reduce the filter requirements in the load circuit and this together with the elimination of the transformer results in very substantial size and weight reductions from conventional supplies.

Voltage regulation at the load is achieved by controlling the voltage to which the sink capacitors are charged from the source capacitor.

3,596,370

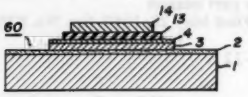
THIN FILM CAPACITOR

Sami I. Gabrail, Syracuse, N.Y., assignor to General Electric Company

Filed Dec. 11, 1969, Ser. No. 884,164
Int. Cl. H01g *3/07*
U.S. Cl. 317—230 **6 Claims**

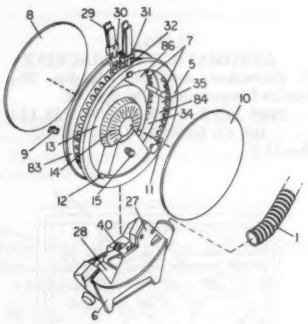
This invention relates to an improved thin film capacitor structure and a method for making the same. The thin film capacitor comprises two layers of aluminum separated by a

dielectric layer. Interposed between one of the aluminum layers and the dielectric layer is a barrier layer which



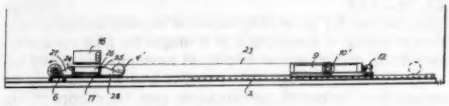
prevents the various mentioned layers from alloying together in the temperature range of 400° to 600° C.

3,596,371
HAIR DRYER
Raymond L. Hanisco, Lansdale, Pa., assignor to Proctor-Silex Incorporated, Philadelphia, Pa.
Filed Oct. 10, 1969, Ser. No. 865,319
Int. Cl. A45d *20/18*
U.S. Cl. 34—99 **12 Claims**



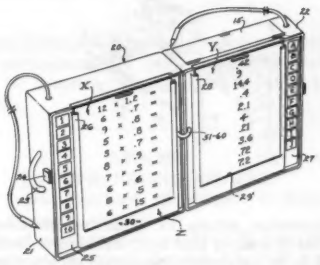
A hair dryer comprises a plurality of components interrelated by means operable manually without the use of tools, said components including a housing component having a motor and blower assembly and providing hair dryer hat and cord storage space with a releasable closure insert and a control box component containing a pair of heaters and a thermostat assembly and providing a choice of heat settings. The electrical circuitry is arranged within the components so that assembly completes the internal electrical circuitry and disconnection of the dryer from the power supply cord must be made before disassembly. A hose providing flow communication between the control box component and the hair dryer hat is received within a peripheral groove in the housing component with an access groove adjacent thereto on the control box component to provide a compact, portable unit with readily replaceable components.

3,596,372
STRETCHING, DRYING AND HEAT-SETTING APPARATUS
Narve Hundseid, Slependen, Baerum, near Oslo, Norway, assignor to Aktieselskabet Thunes Mekaniske Vaerksted, Oslo, Norway
Filed Nov. 8, 1968, Ser. No. 774,397
Claims priority, application Norway, Oct. 11, 1968, 4047/68
Int. Cl. F26b *13/12*
U.S. Cl. 34—162 **6 Claims**



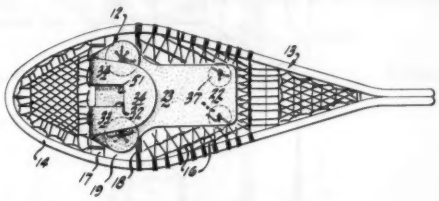
The invention relates to stretching, drying and heat-setting apparatus for felt and wire for paper machines. A cantilever support means for each roll is arranged extending from one side and over the entire web, thus providing supports for temporary support of one shaft journal of the roll. This enables easy introducing and removing of the felt. The cantilever means are preferably assembled to a unit which also supports one part of the drying box.

3,596,373
PROGRAMMED EDUCATIONAL COMPARATOR
Glen E. Morgan, 17901 Yorba Linda Blvd., Apt. 20, Yorba Linda, Calif.
Filed May 19, 1969, Ser. No. 825,810
Int. Cl. G09b *7/00*
U.S. Cl. 35—9 **2 Claims**



A pair of information display boards are provided and upon each of which there is a multiplicity of information wherein each bit of information on one board is related to a bit of information on the other board. Each bit of information upon the two boards is associated with an electrical contact and the contacts thus associated with the two information boards are made comparable to each other by means of selectively replaceable circuit boards having comparable circuit continuity. Affirmation of correct comparison is by means of switching effected by simultaneously touching a pair of manipulatable probes to said contacts at the two information boards respectively, said probes being in a series circuit through a power supply and signal means.

3,596,374
SNOWSHOE FASTENING
William M. Covington, 559 Olivene Court, Placerville, Calif.
Filed Nov. 12, 1969, Ser. No. 875,899
Int. Cl. A63c *13/00*
U.S. Cl. 36—4.5 **9 Claims**

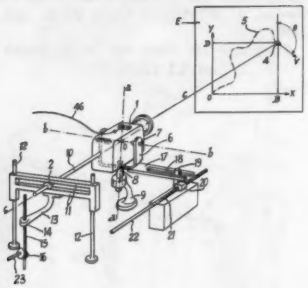


An elongated sheet of elastomeric material includes a heel portion, a sole portion and a laterally enlarged toe portion adjustably secured in a median fore-and-aft alignment on the webbing of a snowshoe. The forward end of the toe portion is arcuately recurved and merges into a rearwardly extending portion apertured to receive the wear's boot therethrough and to afford resilient ankle-encompassing straps capable of biasing forwardly against the back of the wearer's boot with sufficient force to urge the toe of the boot tightly against the arcuate recurved toe portion of the sheet.

3,596,375
APPARATUS FOR SIMULATING ON A SCREEN THE MOVEMENTS OF A SEA OR LAND CRAFT

Rene Hervieu, 3 bis, rue Lamartine, Nantes, Loire-Atlantique, France

Filed Dec. 12, 1968, Ser. No. 783,214
Int. Cl. B64g 7/00; G09b 9/08
U.S. Cl. 35—12 N 11 Claims

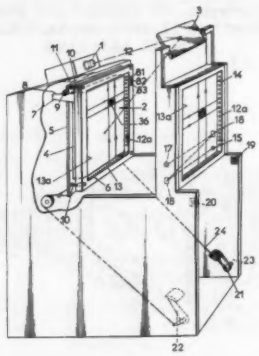


This invention relates to apparatus for simulating the movements of a sea or land craft including a screen on which the route to be traveled by the craft is shown, a projector for projecting an image of the craft on the screen, which projector is mounted for angular rotation about two perpendicular axes to enable the image to be moved in two perpendicular directions on the screen and a drive mechanism controlled by the user of the apparatus or by the navigator or driver of the craft for effecting angular rotation of the projector about its axes in dependence on the simulated direction and speed of the craft.

3,596,376
APTITUDE TESTING MACHINE

Gaston Avedissian, 4, rue Beausejour, Colombes; Dominique Lamotte, 5, rue du Hameau, Meudon-Bellevue; Lucien Lamotte, 5, rue du Hameau, Meudon-Bellevue, and Martine Lamotte, 5, rue du Hameau, Meudon-Bellevue, all of, France

Filed Apr. 30, 1969, Ser. No. 820,375
Claims priority, application France, May 2, 1968, 150 354
Int. Cl. G09b 19/00
U.S. Cl. 35—22 5 Claims

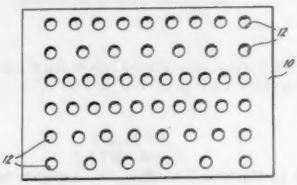


Method and apparatus for administering aptitude tests which comprises a motion-picture projector, a screen on which it projects pictures, means for determining the speed at which an object is caused by a test subject to approach the screen in response to a stimulus projected thereon, means for measuring the force exerted on the screen when said object strikes it, and means for correlating such measurements to measure the aptitudes utilized by the subject in responding to said stimulus.

3,596,377
EDUCATIONAL TEACHING AND TESTING DEVICE

Janet Ballard Abbey, Philadelphia, Pa., assignor to Jerome H. Lacheen, a part interest

Filed May 28, 1969, Ser. No. 828,577
Int. Cl. G09b 19/00
U.S. Cl. 35—22 A 8 Claims

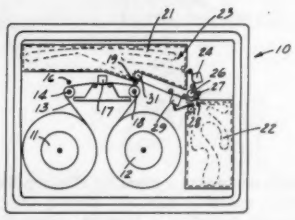


The method and means for teaching and evaluating the intellectual and perceptual development of children including a board con'aining a plurality of rows of recesses each capable of receiving a disc therein.

3,596,378
AUTOMATIC TAPE MACHINE

Charels H. Flubacker, Arlington Heights, Ill., assignor to Artag Plastics Corporation, Chicago, Ill.

Filed July 1, 1969, Ser. No. 838,110
Int. Cl. G09b 5/04; G11b 5/02
U.S. Cl. 35—35 C 13 Claims



An automatic tape machine that may be used to teach foreign languages for example and in which a student may listen to a master tape, and then record on a student tap his pronunciation of the lesson and then listen to his recorded lesson before once again hearing the master tape.

The machine is designed and constructed such that it operates with a single talk-review lever wherein prior tape machines for teaching have required a number of switches and operations by the student to operate the machine.

A number of automatic features are provided including automatic cuing such that while the student is recording on the student tape the master tape backs up one sequence so that it will be prepared to repeat the master tape after the student has completed his recording.

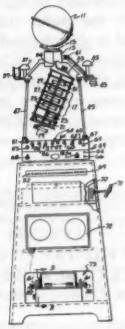
3,596,379
AUTOMATIC CONTROL FOR PLANETARIUM OPERATION

Albert A. Faulkner, Conshohocken, Pa., assignor to Spitz Laboratories, Inc.,, Chadds Ford, Pa.

Filed July 5, 1968, Ser. No. 742,879
Int. Cl. G09b 27/00
U.S. Cl. 35—42.5 7 Claims

A planetarium for projecting celestial objects includes control means which is connected to a magnetic tape recorder. A description of a celestial display is normally recorded on the magnetic tape through the recorder and alternatively or in conjunction therewith information can be recorded on photographic slides. As the persons in attendance listen to the voice description of the display from the magnetic tape recorder, a second track on said tape provides control signals to automatically turn off certain of the planetarium lamps.

The control signals further act to turn on and turn off motors which move the lamps, thereby simulating the movement of the celestial bodies as they are being described by the voice



from the tape recorder. At the same time, switches can be operated to cause a library of slides to be shown from a projector if it is deemed appropriate to have such slides shown during the recorded lecture.

3,596,380

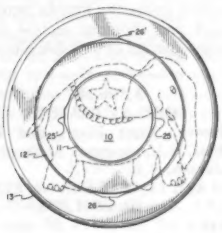
COMBINATION TOY AND EDUCATIONAL APPARATUS

James J. Williams, 2330 S. Pacific, Boise, Idaho

Filed Jan. 8, 1970, Ser. No. 1,416

Int. Cl. A63f *9/08*

U.S. Cl. 35—77 **3 Claims**



The combination toy and educational apparatus of the present invention includes a plurality of annular rings concentrically disposed one within another. The ring elements are each provided with a convex terminal edge portion and an opposing concave terminal edge portion so that the convex edge portion of one ring is engageable with a next succeeding larger concentrically disposed ring. The convex edge portions of the rings are provided with a flat planar surface athwart the edge, while the opposing concave edge portion is provided with a transversely planar receded portion adjacent one of the contiguous faces of the ring. When the planar surfaces of one ring are aligned the recede portion of the next larger concentrically disposed ring, the first ring may be engaged with or removed from the latter ring. Indicia may be printed or embossed upon one of the faces of the rings, which indicia when aligned may form a representation of words or objects for educational purposes.

3,596,381

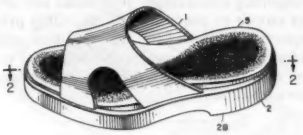
SANDAL

Tatsuo Fukuoka, No. 25, 4-Ban, 2-chome, Shin-Minami-Fukushima, Tokushima, Tokushima Prefecture, Japan

Filed Nov. 22, 1968, Ser. No. 778,178

Int. Cl. A43b *3/12, 13/06*

U.S. Cl. 36—11.5 **4 Claims**



The present invention relates to an improvement of sandal, and more particularly to a comfortable improved sandal which is to be integrally formed of thermoplastic synthetic resin material.

3,596,382

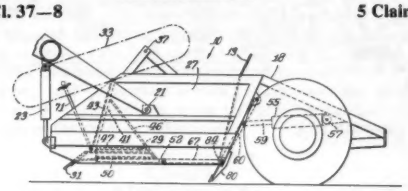
EARTH HANDLING SCRAPER

Alfred Jan Jocher, Lombard, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation of application Ser. No. 534,739, Mar. 16, 1966, now abandoned. This application Jan. 12, 1970, Ser. No. 1,953

Int. Cl. E02f *3/62*

U.S. Cl. 37—8 **5 Claims**



A scraper having a bowl with an open end, and forward and rear compartments defined by an ejector in its rearward position, the ejector being capable of traversing the forward compartment to eject material out the open end. A sliding bottom for enclosing the rearward portion of the bowl when the ejector is rearward and movable with the ejector to an open position to permit discharge of material through the bottom of the bowl.

3,596,383

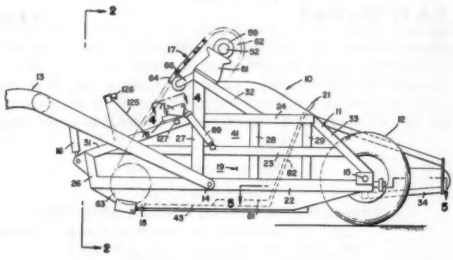
IMPROVED EJECTION SYSTEM FOR ELEVATOR SCRAPER

Louis L. Bispo, and Medrick Perra, both of 301 Santa Barbara Ave., Modesto, Calif.

Filed Aug. 2, 1968, Ser. No. 749,653

Int. Cl. B60p *1/36*

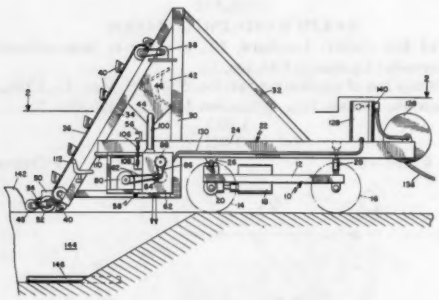
U.S. Cl. 37—8 **3 Claims**



A bowl-equipped earth-moving machine having an endless conveyor with its lower end disposed adjacent an earth

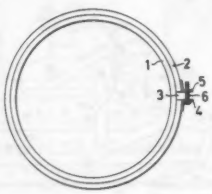
cutting blade is disclosed. A fixed floor portion is arranged immediately rearwardly of the blade and a rolling floor portion with an upstanding ejection gate is arranged to first move together over the fixed floor followed by the ejection gate moving over the rolling floor for expelling earth from the bowl when the lower end of the endless conveyor is shifted to an out-of-the-way position. Fluid power is employed to drive and shift the endless conveyor and to power the earth-expelling mechanism. Interlocks are included in the fluid power circuit to prevent earth expelling prior to placing the conveyor in its out-of-the-way position and a resilient safety mechanism is arranged on the conveyor to permit sudden upward movements when the conveyor encounters large, hard to move objects.

3,596,384
EXCAVATION REFILL PACKER
Roy E. Neujahr, 1540 Nob Hill Drive, Escondido, Calif.
Filed Dec. 9, 1968, Ser. No. 782,210
Int. Cl. E02f *5/22*
U.S. Cl. 37—142.5 **7 Claims**



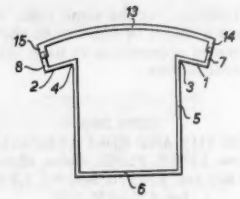
The excavation refill packer has its principal use as an ambulant ditch packer, a self-contained machine which picks up and screens soil from a pile alongside a ditch and throws the soil into the ditch, by means of a high-speed impeller, with sufficient force to pack the soil firmly without the need for tamping. Apparatus is provided for injecting a closely controlled flow of water into the moving flow of soil to obtain the desired moisture content. The entire machine is controllable by a single operator, who can direct the high-velocity stream of soil to fill the ditch evenly as the machine advances. The machine can be adapted for pack-refill of excavations which are not narrow as the word "ditch" suggests, since the machine can make repeated and progressive passes.

3,596,385
EMBROIDERY FRAME
Shizue Tachibana, No. 291, Sakoshi, Ako Hyogo Prefecture, Japan
Filed June 10, 1970, Ser. No. 45,126
Int. Cl. D05c *1/04*
U.S. Cl. 38—102.2 **4 Claims**



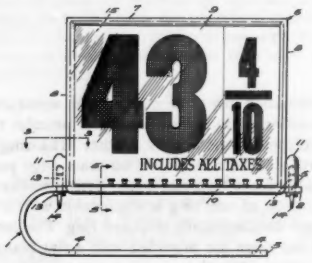
An embroidery frame, which is in an annular shape and consists of an inner ring and an outer ring, the inner ring comprising a flange formed around its lower edge, ratchet-shaped slowly curving shoulders being provided on the external periphery of the inner ring, a protruding ridge being further provided in the circumferential direction on the thick part of each shoulder, the outer ring fitting into the inner ring with embroidery cloth interposed therebetween, slowly curving ratchet-shaped shoulders being similarly formed on the internal periphery of the outer ring, a groove of a fixed length being provided in the circumferential direction on the outside of each shoulder so that each of the protruding ridges of the outer ring will slidably fit into each of said grooves. This embroidery frame enables to securely stretch embroidery cloth between the inner and outer rings by fitting the outer ring into the inner ring with the cloth interposed therebetween and then slightly revolving either of said two rings.

3,596,386
PROCESS FOR THE TREATMENT OF KNITTED TEXTILE ARTICLES
Jean Zapater, Ganges, France, assignor to Societe Rhodiaceta, Paris, France
Filed Feb. 27, 1969, Ser. No. 802,950
Claims priority, application France, Feb. 29, 1968, 49716
Int. Cl. D06f *59/02*
U.S. Cl. 38—144 **3 Claims**



Knitted textiles are subjected to heat treatment on a contoured rigid framework formed from detachable elements which are assembled inside the knitted textile, the torso section and the neck and shoulder section of the framework being formed from separate detachable elements.

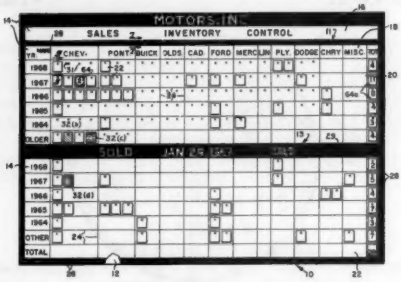
3,596,387
DISPLAY DEVICES
Edward Ten Hoeve, Toms River, and Peter De Korte, Wyckoff, both of, N.J., assignors to Empro Products Company, Inc., Paterson, N.J.
Filed Apr. 11, 1969, Ser. No. 815,382
Int. Cl. G09f *3/18*
U.S. Cl. 40—10 D **6 Claims**



A display device for changeable signs having a transparent cover for receiving therein in upright position the changeable cards carrying suitable indicia. The cover is enclosed on all sides except the bottom, where it receives a bracket and which substantially fits in the opening to seal the latter against the entrance of foreign substances. The cover is frameless and formed of relatively thin walls which overlap

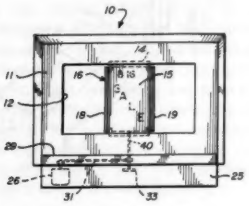
the bracket at the bottom. Ears are formed on the opposite end walls at the bottom extending substantially throughout the width of the cover and in position to be seated upon the bracket. The ears are internally threaded to receive fastening screws detachably connecting the cover with the bracket and which can be inserted through openings in the ears.

3,596,388
INFORMATION CONTROL SYSTEM AND APPARATUS
James R. Shorten, 526 Campbell St., Scranton, Pa.
Filed May 19, 1969, Ser. No. 825,693
Int. Cl. G09f *3/18*; B41l *1/24*
U.S. Cl. 40—19.5 **9 Claims**



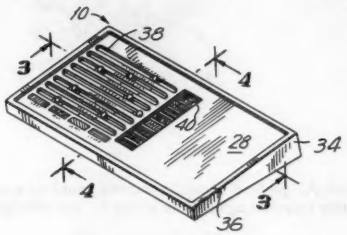
An information control system and informational display board employing centralized visual accumulation and display of inventory and sales data, equipment location, departure and arrival data, and similar information in predelineated transversely related and variable columnar order to provide a substantially instantaneous overall picture of day-to-day or other periodic business progress and/or inventory status. The display board is adapted for variable sectionalization through use of removable elastic divider tapes end fastened through terminal ring hooks to equispaced, oppositely aligned hook elements disposed in peripheral bounding relation to the marginal edges of the board and/or hook carrying removably mountable sectionalize strips mounted on the board face and to receive color coded informational tag sections identifying inventory on hand and sold or hand written informational data respecting location, departure and/or arrival information respecting equipment used in carrying on a business.

3,596,389
DISPLAY
Fred Drueck, Jr., 4941 W. Henderson St., Chicago, Ill.
Filed Aug. 26, 1969, Ser. No. 853,163
Int. Cl. G09f *11/30*
U.S. Cl. 40—36 **9 Claims**



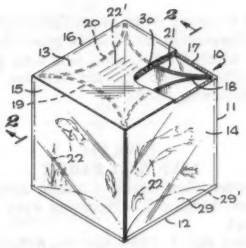
A point-of-sale display device including two parallel panels which are pivotally operated to display advertising indicia and the like provided on each of the opposite sides thereof, said panels being proportioned to overlap to close a window in the display and when so overlapped, the advertising indicia on each of the respective panels is positioned to form a complete message.

3,596,390
MANUALLY OPERABLE COMPUTER
John Scalice, West Paterson, N.J., assignor to Clinique Laboratories, Inc., New York, N.Y.
Filed Nov. 5, 1968, Ser. No. 773,494
Int. Cl. G09f *11/30*
U.S. Cl. 40—65 **10 Claims**



A manually operable computer used, for example, for cosmetic purposes to indicate directions for proper procedure in accordance with a predominating degree of a number of different variable factors. A plurality of indicating means are provided for indicating different degrees of a plurality of variable factors, respectively. The indicator means are manually operable and each include a manually shiftable indicating strip having a plurality of differently colored areas which are respectively indicative of the different degrees of a given variable factor. The number of colored areas of any one strip matches those of all of the others, and the several indicating means respectively include indicating locations at which selected colored areas are located. With the selected colored areas thus situated at these indicating locations, it is possible to determine which of the colors predominates over the others, and a further means is provided for giving directions as to procedures to be taken in connection with which one of the colors predominates.

3,596,391
BLOCK DEVICE
Eugene U. Knight, Jr., 3879 Clayton Ave., Los Angeles, Calif.
Filed Oct. 24, 1969, Ser. No. 869,290
Int. Cl. G09f *1/12*
U.S. Cl. 40—152 **23 Claims**

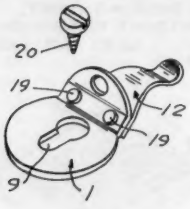


A block device having transparent outer walls through which there are visible inner walls within the block carrying art work, with the inner walls within the block carrying art work, with the inner walls being centrally bowed inwardly away from the transparent outer walls in a manner giving a unique somewhat three-dimensional appearance to the art work.

3,596,392
PICTURE FRAME CLAMP AND HANGER
Eugene J. Vani, 724 Water St., Benwood, W. Va.
Filed Aug. 12, 1969, Ser. No. 849,378
Int. Cl. G09f *1/12*
U.S. Cl. 40—156 **1 Claim**

The present picture frame clamp and hanger is installed on a picture frame by inserting a screw at the desired location

on a frame, slipping the clamp over the screw and tightening the screw and after a series of said clamps are so installed

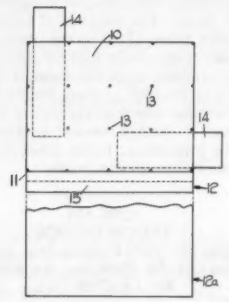


around the picture frame, a canvas panel or picture can be securely retained against the frame by said clamps.

3,596,393
DEVICE FOR THE HOUSING AND STORAGE OF MICROFILM

Janice Marilyn Lithgow, London, England, assignor to Microgen Limited, Nottingham, England

Filed Oct. 31, 1968, Ser. No. 772,336
Int. Cl. G09f *1/10*
U.S. Cl. 40—159 **6 Claims**

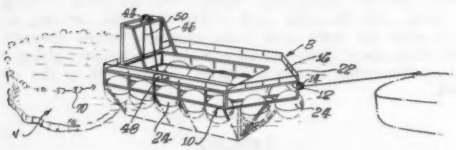


A device for retaining strips of microfilm and comprising a pair of sheets disposed in face-to-face relationship, the sheets being secured together at spaced fastening points whereby strips of microfilm can be inserted between the sheets and located at the fastening points.

3,596,394
LIVE BAIT BARGE

Thomas E. Reeder, Seal Beach, Canada, assignor to Robert Marvin Olson; Millard T. Chase and Fern C. Chase, part interest to each

Filed July 2, 1969, Ser. No. 838,449
Int. Cl. A01k *97/04, 73/12*
U.S. Cl. 43—6.5 **11 Claims**

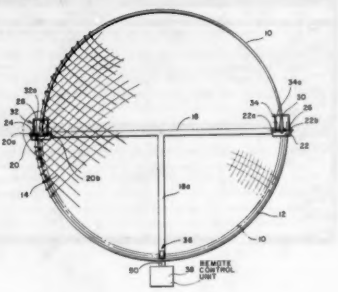


A live bait barge having a frame which supports a bait-receiving tank. The tank is provided with a bait-admitting opening and a gate for such opening. The gate is normally closed so as to retain bait within the tank. To load bait into the tank the barge is moved to a position adjacent a bait-receiving net. The net is attached to the barge so that the opening faces the confines of the net. The gate is then opened relative to the opening and bait swim from within the confines of the net to within the confines of the tank. The bait tank after being loaded is moved to its bait-dispensing station. The barge is provided with apertures to permit the free flow of ambient sea water relative to the confines of the bait tank.

3,596,395
REMOTE-CONTROLLED TRAP FOR SMALL GAME

Dee S. Clement, 245 East 100 North, Santaquin, Utah, and Warren Alfred Ross, Ajo, Ariz.

Filed Apr. 10, 1969, Ser. No. 815,148
Int. Cl. A01m *23/32*
U.S. Cl. 43—63 **9 Claims**

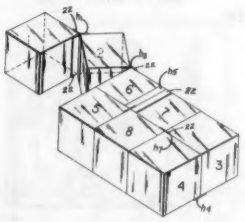


A trap for small game is provided wherein movement of a hinged bow between a first, cocked position and a second, sprung position is controlled by a radio receiver arrangement responsive to a remote radio signal provided by the trapper. The receiver arrangement controls a triggering device including a pivotable trigger release member and a curved, generally upright springlike "striker" member which cooperate to retain the hinged bow therebetween. Pivoting of the trigger release member responsive to the radio receiver arrangement provides release of the hinged bow member and thus springing of the trap.

3,596,396
SYSTEM OF HINGED POLYGONIC SHAPES

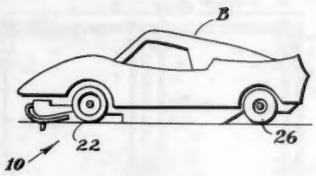
Betty J. Thomson, New York, N.Y., assignor to Geometric Industries Inc.

Filed Apr. 23, 1969, Ser. No. 818,615
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R **9 Claims**



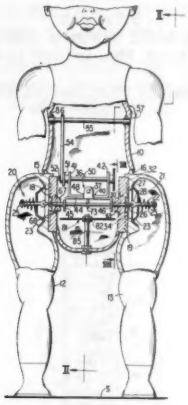
This disclosure is directed to a system of hinging a plurality of distinct similar polygonic shapes for movement between an enlarged modular unit shape composed of the respective plural shapes and a variety of alternate nonmodular shapes. The arrangement is such that one or more of the respective shapes may be pivoted individually or in groups about their respective axis of rotation independent of the remainder shapes. The respective polygonic shapes are hinged so as to pivot or rotate about perpendicularly disposed axis.

3,596,397
MINIATURE SLOT CAR
Anthony Colletti, 158 Horse Block Road, Centereach, N.Y.
Filed Feb. 13, 1970, Ser. No. 11,130
Int. Cl. A63h 18/12
U.S. Cl. 46—243 M 10 Claims



A slot car is provided with a first chassis that rotatably supports front and rear axles on which are mounted the steering and driving wheels, respectively. A second chassis is pivotally mounted on the rear axle and supports the drive motor, the transmission means, as well as the guide pin and the brushes that contact a slotted track. A feature of the invention is the ease of replaceability of the motor without the need for soldering, crimping tools or the like.

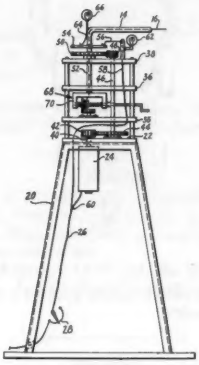
3,596,398
WALKING TOY FIGURE
Robert Gardel, New York, and Egon Gorsky, Brooklyn, both of, N.Y., assignors to Lettam, Inc., New York, N.Y.
Filed Dec. 13, 1965, Ser. No. 513,380
Int. Cl. A63h 11/00
U.S. Cl. 46—150 7 Claims



A walking toy figure, such as a doll, provided with mechanism designed to rock the body from side to side around a horizontal fore and aft axis with respect to a frame to which the legs are attached, thus causing the weight of the figure to be borne first by one leg and then by the other, the legs being pivoted for independent swinging movement about a transverse horizontal axis but interconnected so as to swing alternately, in a simulation of walking, as first one leg and then the other is burdened with the weight of the figure and the opposite leg is freed to swing forward.

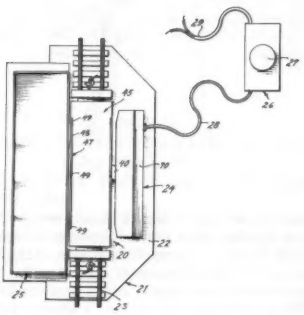
3,596,399
PYLON FOR TETHERED MODEL AIRPLANE
Boyd D. Barbee, 1941 63rd Ave., Sacramento, Calif.
Filed May 13, 1969, Ser. No. 824,194
Int. Cl. A63h 33/26
U.S. Cl. 46—228 3 Claims

A pylon from which a model airplane or the like is tethered and which includes power means for rotating the model airplane in an orbit about the pylon and in which a tethering cable can be payed out, and in which rotatable



lights are energized by a slip-disc-type contact for illuminating translucent portions of the pylon.

3,596,400
MODEL RAILROAD FREIGHT DUMPING CAR ASSEMBLY
Richard C. M. Cheng, Hong Kong, British Crown Colony, assignor to Tyco Industries Inc., Woodbury Heights, N.J.
Filed Nov. 6, 1968, Ser. No. 773,768
Int. Cl. A63h 33/26, 19/15
U.S. Cl. 46—235 7 Claims

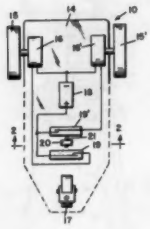


A wheeled chassis carrying a swingable dumping body, the chassis having electromagnet means and the body carrying an armature cooperating with the electromagnet means to effect a swinging, dumping action upon energization of the electromagnet means.

3,596,401
VEHICLE GUIDANCE SYSTEMS
Arthur J. Camire, 14422 S. Louie, Riverdale, Ill.
Filed Feb. 18, 1970, Ser. No. 12,382
Int. Cl. A63h 17/36
U.S. Cl. 46—244 R 7 Claims

A toy-type vehicle carries a movable magnet for detecting a guide wire in the roadbed. Movement of the magnet actuates magnetic switch means in circuit with motors driving the

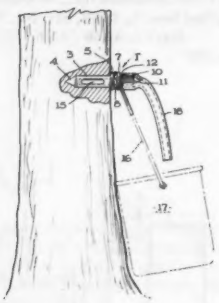
vehicle wheels, so that the vehicle is steered by driving along a path predetermined by the guide wire. In another embodiment the magnetic switch means control a steering motor of a dirigible vehicle wheel.



3,596,402
POWER-GUN-DRIVEN TAPPER

Vincent F. Palmer, 2106 Randolph Road, Apt 212, Wheaton, Md.

Filed June 5, 1969, Ser. No. 830,801
Int. Cl. A01g 23/14; B67b 7/26
U.S. Cl. 47—53 **1 Claim**



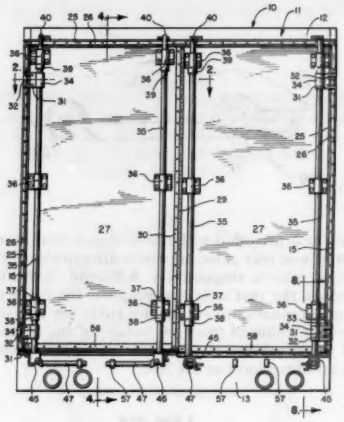
A tapper to be driven into a substantially rigid mass by a power gun for the extraction of fluid therefrom and having a longitudinal body of cylindrical section including transverse and longitudinal fluid passages. A stop collar limits the forward movement of the tapper and a rearwardly disposed pull ring, defines, with the stop collar, a groove for supporting a collection container and permitting reception of a removal tool.

3,596,403
CONTAINER DOOR CONSTRUCTION

George W. Carr, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.

Filed Jan. 20, 1970, Ser. No. 4,255
Int. Cl. E05f 7/02
U.S. Cl. 49—256 **14 Claims**

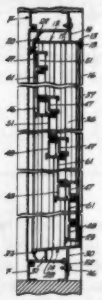
A container includes a door construction having a hinged door which is shiftable vertically when the door is disposed over a container opening. Locking rods are rotatable on the door and are movable vertically therewith. Manually operable levers are connected to the lower ends of the locking rods and abutments on the door frame may be engaged by said levers whereby the door is shiftable to its raised and closed position and maintained therein. In this position the peripheral edges of the door engage peripheral portions of the doorframe so that outwardly directed loads against the door are carried solely by the frame and not on the door hinges or locking rods.



3,596,404
SLIDING SASH WINDOW ASSEMBLY

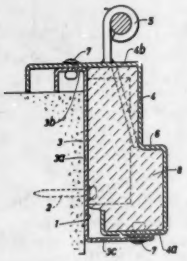
James R. Moose, Miami, Fla., assignor to Foldown Awnings Inc.

Filed Apr. 29, 1969, Ser. No. 820,171
Int. Cl. E06b 3/44
U.S. Cl. 49—419 **8 Claims**



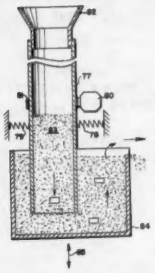
A sliding window sash assembly glazed with vinyl film and adapted for easy attachment to framework openings in screened enclosures and the like for use as a windbreak under adverse weather conditions is described. Both the window framework and the sash frameworks are fabricated or thin wall section extruded aluminum members, and to prevent sticking and jamming of the sashes in the frame, vinyl slide members are provided between the insides of the frame and the outsides of the sashes, the slides being somewhat loosely affixed in the lateral direction with respect to the sashes and including adjustable means for controlling the sliding friction of the slide members with respect to the insides of the window frame.

3,596,405
DOOR FRAME ESPECIALLY FOR USE IN FIRE DOOR ASSEMBLES
Bo Ingulf, c/o Hellbergs Industrier AB Box 73, 46400 Mellerud, Sweden
Filed Jan. 16, 1970, Ser. No. 3,380
Claims priority, application Sweden, Jan. 23, 1969, 879/69
Int. Cl. E06b 1/04
U.S. Cl. 49—504 1 Claim



The present door frame is for being mounted in an opening in a wall and includes fixing elements attachable to the walls and a frame portion adapted to fit a door or the like and connected to said fixing elements.

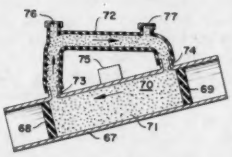
3,596,406
SONIC POLISHING APPAPARATUS
Howard E. McKinney, La Jolla, Calif., assignor to Shell Oil Company, New York, N.Y.
Continuation-in-part of application Ser. No. 710,993, Mar. 6, 1968. This application Oct. 15, 1968, Ser. No. 767,763
Int. Cl. B24b 19/00, 31/00, 1/00
U.S. Cl. 51—7 6 Claims



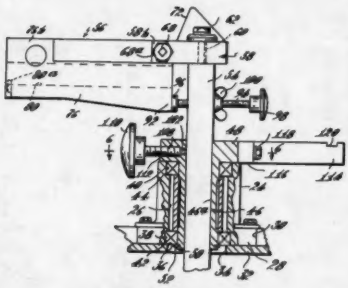
Method and apparatus for improving the rate of surface treatment of industrial parts being treated in a continuous flow sonic finishing apparatus by adjusting the pressure exerted by the treating medium on articles being treated as they pass through the treating chamber.

3,596,407
SONIC POLISHING APPAPARATUS
Howard E. McKinney, La Jolla, Calif., assignor to Shell Oil Company, New York, N.Y.
Continuation-in-part of application Ser. No. 710,993, Mar. 6, 1968. This application Oct. 24, 1968, Ser. No. 770,223
Int. Cl. B24b 19/00, 31/00
U.S. Cl. 51—7 5 Claims

A resonant finishing apparatus having a finishing chamber is provided with means for recirculating parts and/or finishing medium between spaced portions of said chamber in response to resonant vibration of said chamber.

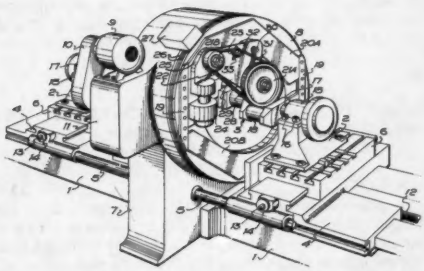


3,596,408
LENS GRINDING MACHINE
Lindsay M. Ball, Medford, and George L. Guaraldi, Chelmsford, both of, Mass., assignors to Bond Research Laboratories, Inc., Somerville, Mass.
Filed June 4, 1969, Ser. No. 830,388
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—55 8 Claims



A lens polishing and/or grinding machine comprising a base, and means for supporting a spindle above the base, comprising a post mounted on the base for oscillation about its vertical axis and for heightwise adjustment thereon, an arm mounted at the upper end of the post for adjustment about a horizontal axis at right angles to the axis of the post, and means at the distal end of the arm for holding the spindle.

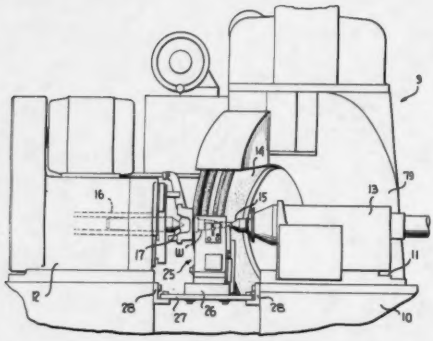
3,596,409
METHODS AND MACHINES FOR GRINDING CRANKSHAFTS
Eric Levesley, Sheffield, England, assignor to English Steel Corporation Limited
Filed Aug. 12, 1969, Ser. No. 849,470
Claims priority, application Great Britain, Aug. 27, 1968, 40892/68
Int. Cl. B24b 21/00
U.S. Cl. 51—135 9 Claims



A machine for grinding crankshafts has an annular carrier rotatable coaxially around a crankpin of a stationary

crankshaft, and a pair of pulleys are mounted on the carrier in such a manner that one of them can be moved towards the axis of the carrier, and abrasive belt is trained around the pulleys with its abrasive surface facing outwards, and one of the pulleys is adapted to be driven, so that as the belt orbits with the pulleys around the crankpin the belt is driven in contact with the crankpin for the grinding operation. At the contact point, the back of the belt is in contact with one of the pulleys.

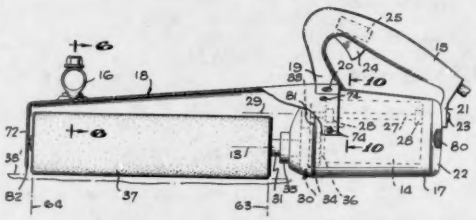
3,596,410
MACHINE TOOL WITH RETRACTABLE COMBINED CHORDAL GAGE AND LATERAL LOCATOR
William E. Happel, Waynesboro, Pa., assignor to Litton Industries, Inc., Beverly Hills, Calif.
Filed Feb. 17, 1969, Ser. No. 799,565
Int. Cl. B24b *49/04*
U.S. Cl. 51—165 **21 Claims**



This disclosure relates to a combined chordal gage and axial locator for use on grinding machines wherein cylindrical and annular surfaces are to be ground. A combined, single mounting for the normally independent chordal gage and axial locator and a common means for advancing and retracting both devices are provided. The gage and locating devices are advanced at the beginning of a grinding operation and prior to work rotation to provide endwise or axial location of the workpiece in relation to the grinding wheel and, at this time, the locating device is made operative, whereas, the chordal gage is maintained inoperative and is maintained a small distance from the workpiece during the axial movement thereof. Upon completion of endwise or axial location, the combined assembly is retracted, the grinding wheel is advanced, the workpiece is rotated, and the combined assembly is again advanced during the grinding operation whereupon the chordal gage is brought into operative engagement with the workpiece, whereas the axial locator is maintained inoperative. Retraction of the combined assembly into a protective hood is effected at the end of each grinding operation and said assembly is protected from damage during the placement of a further workpiece upon the machine.

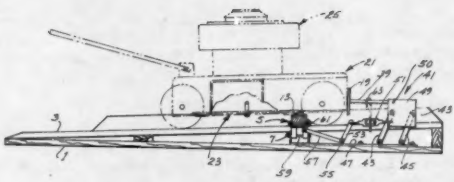
3,596,411
PORTABLE DRUM-TYPE SURFACE-TREATING TOOL
Alma A. Hutchins, 49 N. Lotus, Pasadena, Calif.
Filed Mar. 9, 1970, Ser. No. 17,478
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 **22 Claims**

A portable surface-treating tool including a drum which is driven rotatively by a motor, and is mounted for its desired rotation relative to a body of the tool by bearings located at opposite ends of the drum, and which carries a sheet of sandpaper or other surface treating material about the drum for contacting a work surface. The sandpaper sheet is desirably of a length to extend approximately one complete turn about the drum and is secured to the drum in a manner enabling removal and replacement of the sandpaper without partial or



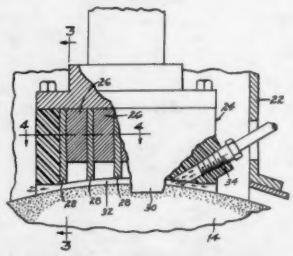
complete detachment of the drum or its bearings from the body of the tool.

3,596,412
ROTARY MOWER BLADE SHARPENING APPARATUS
Jay H. Brayman, P.O. Box 2, Dorsey, Ill.
Filed Sept. 25, 1969, Ser. No. 860,979
Int. Cl. B24b *19/00*
U.S. Cl. 51—246 **9 Claims**



Apparatus for sharpening the blade of a rotary lawn mower without removing it from the mower, utilizing the mower engine for rotating the blade for sharpening it, having a base and a sharpener mounted for up-and-down movement with respect to the base, the sharpener being moved up into position for sharpening the blade from below on rolling the mower over the sharpener, and a special blade adapted for being sharpened by the apparatus.

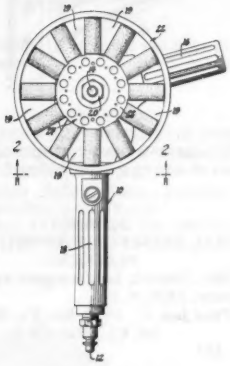
3,596,413
ABRADING TOOL CHIP EXTRACTOR AND REMOVER
Donald R. Stewart, 2565 Yellow Spring Road, Springfield, Ohio
Filed Nov. 26, 1969, Ser. No. 880,190
Int. Cl. B24b *55/00, 55/04*
U.S. Cl. 51—262 A **7 Claims**



A system for removing metal chips from a driven endless abrading tool to prolong the useful life of the tool. A magnet is provided to extract loosely clinging chips from the abrasive surface to remove the chips of the tool before the chips are ironed into such abrading tool by further abrading contact with a workpiece. A wind tunnel is provided and is in part

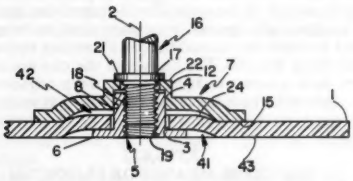
formed by the magnet, and the abrasive surface of the tool, and an air stream passing through the tunnel exerts a force greater than the magnetically attractive force of the magnet to preclude the accumulation of chips on the magnet.

3,596,414
METAL-FINISHING APPARATUS
Antonio Pirrello, Lincoln Park, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 17, 1969, Ser. No. 877,247
Int. Cl. B24d *17/00;* **B24b** *23/00, 9/00*
U.S. Cl. 51—358 **6 Claims**



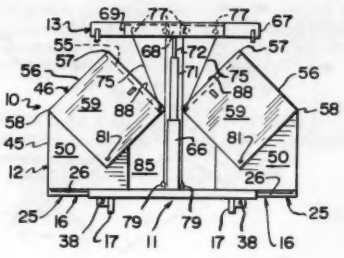
A metal-finishing assembly which has a quickly replaceable abrasive and lookthrough viewing means for continually observing the surface being finished. One form of the assembly includes a disk-shaped member having radially extending abrasive tubes resiliently mounted on arms. The assembly is attached to a shaft by locking means which may easily e disengaged to allow the tubes to be rotated on the arms.

3,596,415
GRINDING WHEEL HUB ASSEMBLY
Irving James Donahue, Jr., 100 Oak St., Shrewsbury, Mass.
Filed Nov. 6, 1968, Ser. No. 773,918
Int. Cl. B24d *17/00*
U.S. Cl. 51—378 **13 Claims**



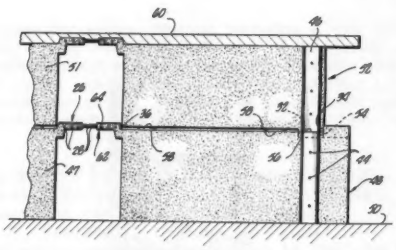
An abrasive grinding disk hub assembly for mounting the disk on a spindle is made up of a nut member which is inserted through a clearance hole in the disk up to a shoulder on the nut and into a socket in a dish-shaped mounting flange on the other side of the disk. When mounted, the nut threads to the spindle which shoulders against a lip on the flange and so as the nut is screwed onto the spindle, the flange acts as a disk spring squeezing the grinding disk between the nut and the flange and a spindle shoulder distorts the lip, tending to lock the nut on the spindle. The nut is of substantially harder material than the flange and may have ridges which cut into the flange socket, thereby fixing the nut in the socket so that it cannot rotate relative thereto.

3,596,416
EXPANDABLE STRUCTURE
Walter S. Hojka, 5300 W. 135th St., Midlothian, Ill.
Filed June 19, 1969, Ser. No. 834,715
Int. Cl. B60p *3/34;* **E04b** *1/344*
U.S. Cl. 52—64 **9 Claims**



An expandable structure is disclosed herein in the form of a trailer. The trailer is provided with an extensible base frame and collapsible shells which, in addition to being vertically expandable, are extendible with the base frame. A means is provided for extending the secondary frame means along with a means for adjustably positioning a roof assembly with respect to the shells and to expand the shells.

3,596,417
PRECAST ROOMS
Henry B. Zachry, San Antonio, Tex., assignor to H. B. Zachry Company, San Antonio, Tex.
Filed Apr. 9, 1969, Ser. No. 814,612
Int. Cl. E04b *1/34;* **E04h** *1/04*
U.S. Cl. 52—73 **6 Claims**

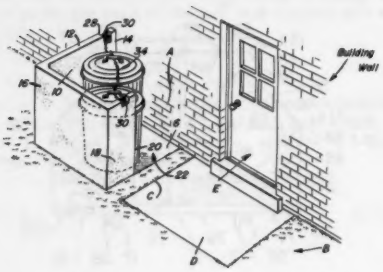


Concrete rooms, each having an integrally cast top segment, consisting of a top panel and three sidewalls, and a precast floor segment, secured to the top segment during its integral casting, are stacked on top of one another to form a rigid structure of multiple floors. The rear ends of the rooms have integrally cast cantilevered overhangs such that when the rear ends of two stacks of rooms are positioned adjacent one another the cantilevered overhangs form floors and ceilings for the corridors defined by the space between the stacks. Each stack of rooms consists of an alternating arrangement of long and short rooms, each short room having a locking ridge at its forward end for locking into an opening formed across the forward end of a corresponding longer room.

3,596,418
CONCRETE GARBAGE CAN ENCLOSURE
George L. Sedwick, Jr., 227 1st St., and Leo K. O'Neil, 109 Delaware Drive, both of Butler, Pa.
Filed Sept. 8, 1969, Ser. No. 856,041
Int. Cl. E04h *1/12*
U.S. Cl. 52—79 **2 Claims**

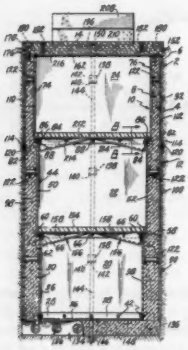
A prefabricated portable open-top stall-like enclosure expressly designed for permanently erected use on a plot of one's backyard adjacent an edge of a back door stoop or

patio surface and which serves to accessibly support and protectively shield outdoors garbage and trash cans. It is constructed of high strength reinforced concrete. It is expected to meet its greatest demand for use in currently used housing projects where closely grouped families normally use two or



more lid-covered cans. Upper notched edge portions of two of the walls are provided with embedded J-shaped eyebolts for use by workmen to attach hooks for lifting, lowering and handling. When the enclosure is finally set in place, the then available eyes serve to anchor the ends of an optionally useable lightweight security chain.

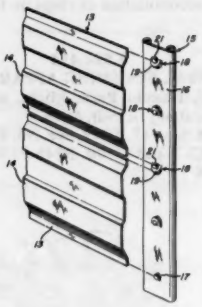
3,596,419
WATERPROOF CONCRETE BURIAL VAULT AND METHOD OF CONSTRUCTION
Donald A. Jalbert, 612 E. 4th St., Bartlesville, Okla.
Filed May 27, 1969, Ser. No. 828,190
Int. Cl. E04h *13/00*; **E02d** *31/02*
U.S. Cl. 52—137 **19 Claims**



A waterproof concrete burial vault, cast in situ by using inner and outer plastic forms that remain in place. The inner plastic form is watertight and defines at least one casket receiving chamber, a sheet of plastic being secured in a watertight manner to the inner form to completely seal a casket placed within said chamber. The vault features a tube that extends vertically from the bottom to the top thereof, which relieves underground liquid pressure beneath the vault.

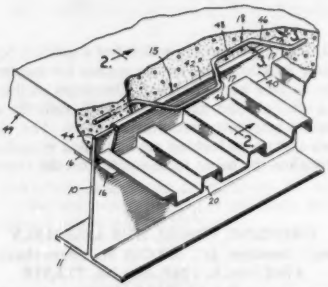
3,596,420
WALL ASSEMBLY
Yale Ducker, 3776 Dorset Drive, Dayton, Ohio
Filed Apr. 30, 1969, Ser. No. 820,566
Int. Cl. E04b *2/72*; **E04c** *2/40*
U.S. Cl. 52—222 **10 Claims**

Apparatus for mounting and assembly of wall segments of strip or panel form to create a unitized wall structure. The mounting means have a strip form and are characterized by



spaced anchor elements devoid of special fixing means and capable in part of serving a dual-holding function.

3,596,421
STRUCTURAL BEAM FOR SUPPORTING CONCRETE FLOORING
Frank E. Miller, Elkhart, Ind., assignor to Elkhart Bridge & Iron Company, Elkhart, Ind.
Filed Jan. 21, 1969, Ser. No. 800,326
Int. Cl. E04b *5/40*
U.S. Cl. 52—333 **4 Claims**

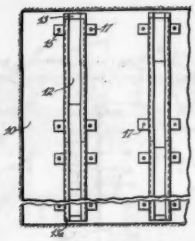


A structural beam for supporting concrete flooring including a base part and an integral web extending upwardly from said base part. An inverted U-shaped cap is mounted over the upper margin of the web. The U-shaped cap has a plurality of longitudinally spaced transverse slots in its upper portion and includes out-turned flanges extending oppositely and laterally from the web. The flanges of the cap are adapted to support deck plates which extend between adjacent parallel beams and over which the concrete flooring is to be poured.

3,596,422
SECURING MEANS FOR FLOORING
William A. Boettcher, 4507 N. Clark St., Chicago, Ill.
Continuation-in-part of application Ser. No. 778,037, Nov. 22, 1968, now abandoned. This application Mar. 16, 1970, Ser. No. 19,920
Int. Cl. E04c *3/292*
U.S. Cl. 52—368 **5 Claims**

The invention comprises securing means for flooring laid over a concrete base between opposite walls of rooms or halls. A set of metal channel casings is secured on the base in spaced relation with ends facing the walls. The casings have inturned top flanges and are overlaid crosswise by the floor boards. The casings each have a series of slidable sleeper sections on the inside in endwise succession. The ends of such series are spaced from the walls opposite them. The usual nails are driven slantwise through the floorboards into the sleeper sections to a point where the nails meet the metal bottom of the casings and are deflected to form endhooks

under the sleeper sections, serving to retain the flooring to the same. The sleeper sections slide endwise when the floor-



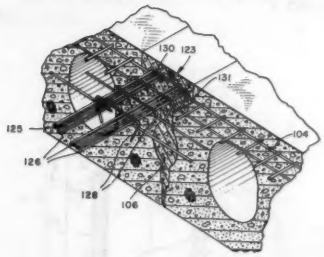
boards expand laterally from damp weather, preventing the buckling of the floor.

3,596,423

JOINT STRUCTURES FOR CONNECTING PRESTRESSED CONCRETE SLABS HAVING INTEGRAL LATERALLY EXTENDED MESH

Alexander L. Jacobus, Salina, Kans., assignor to Hastings Dynamold Corporation, Salina, Kans.

Filed Mar. 17, 1969, Ser. No. 808,024
Int. Cl. E04b *1/41*; **E04c** *5/518*
U.S. Cl. 52—432 **3 Claims**



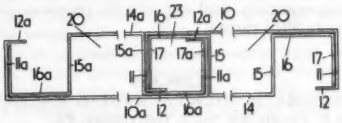
This invention relates to an improved concrete slab forming machine and further to a concrete slab forming machine having an improved sidemold member thereon operable to construct a concrete slab having unique sidewall construction with laterally extended wire mesh to provide for easy connection of adjoining pairs thereof. Still, more specifically, this invention relates to a sidemold structure having mesh guide bar means operable to produce concrete slabs having laterally extended mesh and providing new and novel means for adjoining adjacent concrete slabs through the use of the laterally extended mesh and other connecting means.

3,596,424

A PANEL ASSEMBLAGE MEANS FOR THE CONSTRUCTION OF THE WALLS OF BUILDINGS

Robert Mitchell Ward, 58 Traquair Park West, Edinburgh 12, Scotland

Continuation of application Ser. No. 690,804, Dec. 15, 1967, now abandoned. This application Sept. 15, 1969, Ser. No. 858,187
Int. Cl. E04d *3/35*, *3/362*
U.S. Cl. 52—520 **2 Claims**



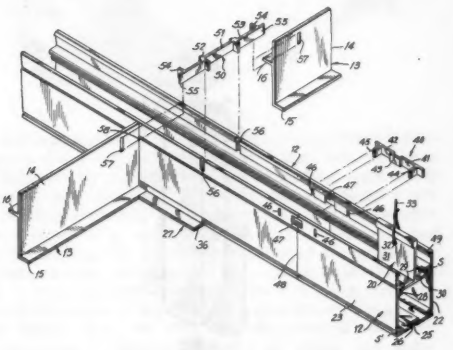
A panel assemblage for forming the walls of buildings comprising an outer and inner metal sheet or components both formed with longitudinal channels at their vertical edges which channels are of such section that the channels of one sheet interfit with those of the other sheet to form between the sheets a cavity which is filled with heat-insulating material, and also form outer channels which are open on one of the faces of the panel, assembling said panels so that the outer channels of laterally adjacent panels interfit and form therebetween vertical channels or cavities, inserting locking members into the vertical channels or cavities to bind together said panels, which members project upwards to engage the corresponding channels in the assembled panels immediately above and anchoring the said locking members to purlins secured to a supporting framework.

3,596,425

CEILING TILE SUPPORT GRID SYSTEM

Michael J. Kodaras, Scarsdale, N.Y., assignor to Keene Building Products Corporation

Filed Feb. 20, 1970, Ser. No. 12,969
Int. Cl. E04b *5/57*
U.S. Cl. 52—665 **13 Claims**



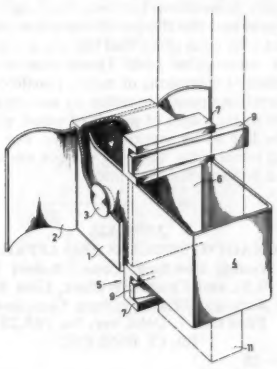
A suspended ceiling structure including a grid system defining a rigid, interconnected series of transversely and longitudinally extending ceiling tile support elements, characterized by the support elements mounting adjacent ceiling tiles at disparate heights. The structure has sufficient rigidity to form the upper anchor portion for a vertical partition wall.

3,596,426

FASTENING DEVICE FOR BALCONY RAILINGS, BANISTERS, BRIDGE RAILINGS AND THE LIKE

Nils Gosta Loov, P.O. Box 19, Ersmark, Sweden

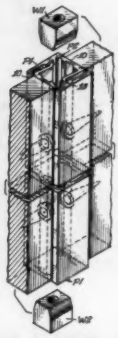
Filed Dec. 12, 1968, Ser. No. 783,342
Claims priority, application Sweden, Dec. 19, 1967, May 2, 1968, 17416/67;5920/68
Int. Cl. E04b *1/41*; **E04f** *11/18*
U.S. Cl. 52—704 **8 Claims**



A body is adapted to be embedded in a concrete floor, step and the like. A socket portion includes a plurality of walls

defining an opening therethrough for receiving a vertical metallic post of a railing and the like. The socket portion is pivotally supported by said body for pivotal movement about a pivot axis with respect to the body. A member is disposed between the opening and said body, the member defining a pair of grooves facing said opening. These grooves are disposed on opposite sides of said pivot axis, and each groove receives a wedge means engaging and holding a vertical post in place within said opening.

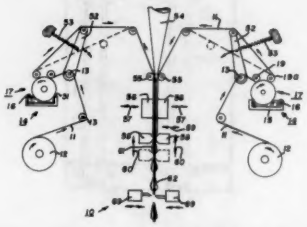
3,596,427
PANEL POST JOINING MEANS
Arthur Fernandez, Bayamon, and David H. Humphrey, San Juan, both of, P.R., assignors to Orbit International, Inc.,, San Juan, P.R.
Filed Mar. 14, 1969, Ser. No. 807,323
Int. Cl. E04c *3/32*; E04g *25/08*
U.S. Cl. 52—731 10 Claims



Means is provided for joining panel posts together in such manner that partitions or the like formed of panel and post units may be readily assembled in a minimum of time, and thereafter "knocked down" with equal facility. Channel-shaped posts are provided having the flanges thereof interfitting with each other and joined as a result of plug wedges forced into the ends of the posts between the webs and flanged thereof and concealed inside the channel-shaped posts. The plug wedges are designed to coact with the webs and flanges of the posts in such manner that interlocking tongue and groove connections between the flanges of one channel-shaped post and the flanges of the other channel-shaped post so coact with each other that the two posts form a single substantially rectangular post. These channel-shaped posts may be formed as extrusions of metal, plastic or the like and used for assembling panels together by securing the channel-shaped posts to the edges of panels of wood, plastic, particle board or the like as by means of screws. For disassembling the post and panel units, the plug wedges are tapped so that pull rods can be threaded thereinto.

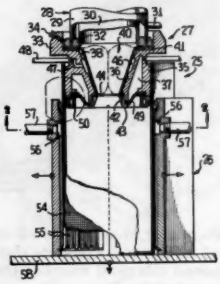
3,596,428
PACKAGING PROCESS AND APPARATUS
William E. Young, Stamford, Conn.; Robert Wolfelsperger, Fairfield, N.J., and Charles Wallace, Glen Rock, N.J., assignors to American Maize Products Company
Filed Oct. 7, 1968, Ser. No. 765,289
Int. Cl. B65b *9/02*
U.S. Cl. 53—28 40 Claims

A process and apparatus particularly adapted for packaging food stuff in a water-soluble and preferably edible starch film manufactured to certain specified characteristics which for the first time makes it possible to form a water-soluble package sealed with a solvent activator such as water which is applied in a controlled manner to the film to preserve its



strength so that tension may be applied to advance the film through a high-speed automatic packaging machine.

3,596,429
APPARATUS AND METHOD FOR FILLING FLEXIBLE CONTAINERS
Clarence W. Vogt, Box 232, Westport, Conn.
Filed July 26, 1968, Ser. No. 748,087
Int. Cl. B65b *57/06, 3/14, 1/28*
U.S. Cl. 53—67 5 Claims

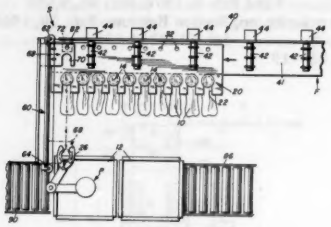


This disclosure relates to the filling of flexible containers with compacted finely divided materials utilizing a filler of the pressure differential type. During the filling of the container, the container is pneumatically supported to establish and maintain a predetermined shape and volume whereby finely divided material of a constant density may be compactly placed therein to obtain a filled container having therein a predetermined weight of the material without weighing the material. Another feature of the apparatus is that in the absence of a container, although a filler may be actuated to dispense material, no dispensing will take place. A further feature is the relationship of the filler to a carton having upstanding flaps and a liner wherein the carton may be filled to overflowing, but wherein the material in the carton has a recess due to the shape of the filler, and wherein in the normal closing of the carton, the overflowing material may be automatically displaced into the recess to provide for a completely filled carton.

3,596,430
AUTOMATIC MILK PACKAGING MACHINE
Laurence P. Parish, RN No. 2, Gettysburg, Pa.
Filed Dec. 9, 1968, Ser. No. 782,230
Int. Cl. B65b *57/02, 67/12*
U.S. Cl. 53—67 6 Claims

A machine for rapidly delivering to a filling apparatus and the removal therefrom, polyethylene bags having a relatively

rigid spout fitting attached thereto, comprising a carrier to which the bags are attached, a conveyor system for moving



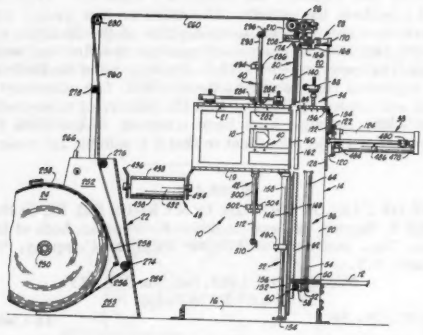
said carrier to a discharge station and a discharge assistant for sequentially delivering the bags to said filling apparatus.

3,596,431

METHOD AND APPARATUS FOR COMPRESSING AND WRAPPING BAGS

William L. Davis, Camden, Ark., assignor to Davis Machine Corporation, Camden, Ark.

Filed June 27, 1969, Ser. No. 837,054
Int. Cl. B65b *13/20, 51/02*; **B31b** *1/62*
U.S. Cl. 53—124 A **8 Claims**



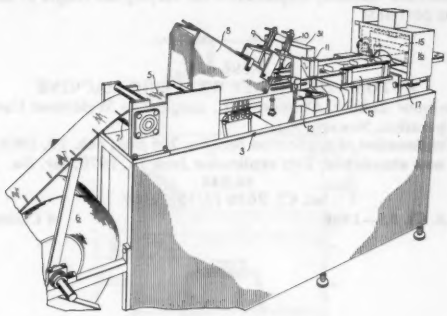
An apparatus and method for compressing a stack of flat, empty bags to form a compressed bale, and for wrapping the bale in an open ended wrapper, the apparatus including cooperating upper and lower platens between which the stack is compressed, and a piston and cylinder assembly for displacing the compressed bags while under compression into a wrapping zone. A wrapper paper feeding and guiding mechanism automatically interposes an elongated sheet of wrapper paper in the path of travel of the compressed bags into the wrapping zone. This causes the wrapper paper to extend around the compressed bale on three sides after a reciprocating knife has severed a portion of the wrapper paper from the continuous sheet. A piston and cylinder assembly then folds down a top extension of the severed portion of the wrapper sheet to cover a portion of the fourth side of the bale. A reciprocating adhesive spray head then moves across the folded down top extension and sprays adhesive thereon. Another piston and cylinder assembly then folds upwardly a bottom extension of the wrapper sheet so that it overlaps the folded down top extension and covers the remainder of the fourth side of the bale. Finally, a press roller is extended across the wrapped bale along the line of adhesive application to bond the top and bottom extensions of the severed portion of the wrapper paper.

3,596,432

PACKAGING MACHINE

Melvin J. Straub, Minnetonka, and Thomas L. Schuette, Osseo, both of, Minn., assignors to Possis Machine Corporation, Minneapolis, Minn.

Filed July 18, 1969, Ser. No. 842,991
Int. Cl. B65b *61/18, 33/00*
U.S. Cl. 53—133 **19 Claims**



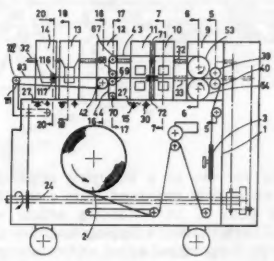
A packaging machine wherein a web of paperboard is continuously drawn along a defined path, under a loading device by which articles or products to be packaged are successively deposited upon the web to be carried thereby through a curtain or sheet of molten thermoplastic resin which debouches from a downwardly opening nozzle, to lay itself onto and form a covering film on the web and over any articles or products thereon. The mouth of the nozzle is a slit which extends transversely across the path of the web and is arched to have its ends close to the web while its midportion is spaced much farther from the web. The film-covered web then travels across a vacuum chamber by which any space between the covering film and the web is evacuated and the film drawn tightly over the articles or products and against the web. A series of closely spaced parallel rollers across the top of the vacuum chamber with their axes transverse to the web supports the web, and certain of the rollers are driven to draw the web through the machine. Beyond the vacuum chamber, the web with the covered articles or products thereon enters a guillotine-type cutoff station where it is cut into discrete units each of which is a complete package.

3,596,433

MACHINE WITH MECHANISMS PLACED IN DISPLACEABLE BOXES FOR THE MANUFACTURING AND DELIVERY OF PLASTIC BAGS OF DIFFERENT LENGTHS STARTING FROM A TUBULAR SHEET

Guido D. Bertoglio, Lugano-Viganello, Switzerland, assignor to Centra Anstalt, Vadox, Liechtenstein

Filed June 6, 1969, Ser. No. 831,192
Claims priority, application Switzerland, Oct. 30, 1968, 16.300/68
Int. Cl. B65b *9/10*
U.S. Cl. 53—183 **6 Claims**



A machine for manufacturing of plastic bags from a tubular web having a plurality of mechanisms for performing the

various necessary operations, such as feeding the tubular web from a roll into the machine, thermowelding the web for forming bag portions, cooling the weldments with provisions for preventing deformations of the welded web, inserting a straw into the tubular web at each bag portion, cutting the finished bag portions off the tubular web and delivering the finished bags, whereby each one of the operating mechanisms is enclosed in a box and whereby some of the boxes are manually displaceable for varying the length of the bag portions.

3,596,434

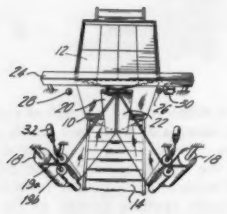
AUTOMATIC PALLET WRAPPING MACHINE

Seymour Zelnick, Orange, N.J., assignor to Weldotron Corporation, Newark, N.J.

Continuation of application Ser. No. 706,601, Feb. 19, 1968, now abandoned. This application June 24, 1970, Ser. No. 56,044

Int. Cl. B65b *11/10, 27/00*

U.S. Cl. 53—198R **4 Claims**



The system provides a vertical sleeve about a loaded pallet. The pallet is advanced into a curtain of film to form a bight which is sealed therebehind under tension by a pair of clamping sealing jaw assemblies. The assemblies, however, release the tension in the web where the seal is made, by initially forming a bulge between two spaced apart clamping lines, which is subsequently relaxed before sealing heat is applied thereto.

3,596,435

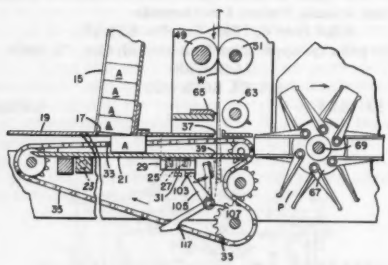
ARTICLE-WRAPPING APPARATUS

Goodwin S. Graves, and Carl R. Pepmeier, both of Fredericksburg, Va., assignors to FMC Corporation, Philadelphia, Pa.

Filed Apr. 4, 1969, Ser. No. 813,607

Int. Cl. B65b *11/12, 41/02*

U.S. Cl. 53—389 **7 Claims**



A device for use in a wrapping apparatus in which a wrapping material is delivered from a supply roll into and across the path of an advancing article which is to be wrapped. The delivered wrapping material often assumes a curl along its longitudinal edges and/or along its leading end which interferes with article wrapping and which the device of the present invention removes by engaging and straightening the free end thereof.

3,596,436

PROCEDURE FOR THE RECOVERY OF DIOLEFINS FROM A MIXTURE THEREOF WITH MONOOLEFINS

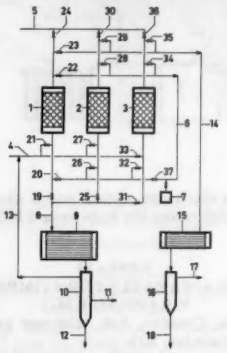
Pierre Dassesse, Jemeppe-Sur-Sambre, Belgium, assignor to Solvay & Cie, Brussels, Belgium

Filed Feb. 9, 1970, Ser. No. 9,559

Claims priority, application Belgium, Feb. 10, 1969, 69,856

Int. Cl. B01d *53/02*

U.S. Cl. 55—19 **8 Claims**



A cyclic process is provided for the recovery of diolefins from vapor mixtures thereof with monoolefins by selective adsorption over a solid adsorbent. A mixture of diolefins and monoolefins is circulated in the presence of a solid adsorbent whereby the diolefins are selectively adsorbed. After the solid adsorbent has adsorbed the diolefins, it is treated with superheated steam to cause desorption of the diolefins and the production of a mixture of gaseous diolefins and water vapor. The vapor mixture is then condensed and the diolefins are separated from water by decantation. The adsorbent is dried and cooled by flushing with the mixture of monoolefins from which diolefins have been removed, to complete the regeneration of the adsorbent so that it is suitable for reuse.

3,596,437

USE OF CARBON DIOXIDE IN A CRUDE OIL PIPELINE

Ralph E. Styring, Jr., and Leonidas P. Whorton, both of Dallas, Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Oct. 18, 1968, Ser. No. 768,923

Int. Cl. B01d *19/00*

U.S. Cl. 55—51 **16 Claims**

A low-viscosity, low-melting point fluid liquefiable at the pressure and temperature in a pipeline and containing at least 50 percent by volume of carbon dioxide and less than 10 percent by volume of ethane is mixed with crude oil to reduce the viscosity and pour point of the oil while the oil is flowed through the pipeline. The carbon dioxide may later be separated from the crude oil and used in an oil recovery process. Natural gas produced with the oil may be used to form part of the carbon dioxide.

3,596,438

REMOVAL OF CARBONYL SULFIDE FROM INDUSTRIAL GASES

John Beukenkamp, deceased, late of Milltown (by Mrs. John Beukenkamp, administratrix); Carl Kirby Stoddard, Westfield, and Joseph L. Waldman, Elizabeth, all of, N.J., assignors to National Lead Company, New York, N.Y.

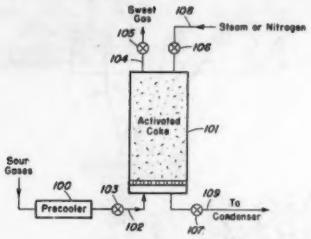
Filed Nov. 3, 1969, Ser. No. 873,563

Int. Cl. B01d *53/00*

U.S. Cl. 55—59 **12 Claims**

The disclosure is of a practical, economical process for removing carbonyl sulfide from the gases generated in a commercial process for producing titanium tetrachloride by chlorinating ilmenite ores, and is carried out by first freeing the gases of titanium tetrachloride, hydrochloric acid and chlorine and then sending the remaining gases, which com-

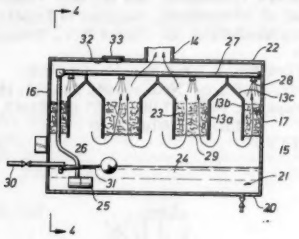
prise mainly, CO, CO_2 N_2 and COS, through a substantially dry static bed of activated carbon maintained at a relatively low temperature whereby the carbonyl sulfide is adsorbed on the activated carbon, the activated carbon then being regenerated for subsequent use by passing steam or an inert gas through the carbon bed at elevated temperatures followed by cooling; the invention being comprehensive also of a cyclic process wherein a series of four towers of activated



carbon are used in a predetermined sequence for removing carbonyl sulfide from chlorinator gases continuously on a plant scale.

For purposes of identification and brevity the term "sour" gas will be used to identify chlorinator gases which have been freed of $TiCl_4$, HCl and Cl and comprise relatively large amounts of CO_2 plus CO, N_2 and small amounts of COS, while the term "sweet" gas will be used to identify a sour gas from which the COS has been removed.

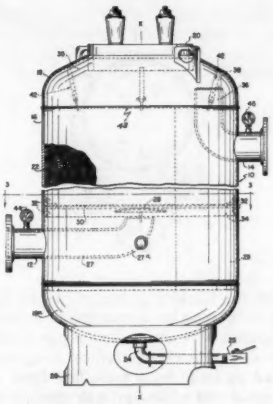
3,596,439
AIR CLEANER
Edward L. Moragne, 4723 Nenana, Houston, Tex.
Continuation-in-part of application Ser. No. 713,205, Mar. 14, 1968, now Patent No. 3,494,108. This application July 2, 1969, Ser. No. 838,465
Int. Cl. B01d *47/00*
U.S. Cl. 55—233 **19 Claims**



A partially enclosed structure having an inclined wall which is provided with a plurality of ports for admitting grease-laden vapors. Baffles extend internally from each of the ports and are employed to direct the incoming vapors through filter material disposed within the structure. A spray header is disposed above the filter material and a submersible pump in the lower portion or reservoir of the structure forces cleaning solvent through the header where it is sprayed on the filter material to cleanse it of grease and oil. The baffles prevent the cleaning solution from flowing out of the ports in the inclined wall and all of the solution is returned to the reservoir and recirculated. A water supply line and float valve are employed to maintain a predetermined liquid level in the reservoir. The inclined, ported surface of the structure is designed to fit closely adjacent a cooking surface to effectively gather grease-laden vapors and the reservoir is designed to fit in the spacing between the stove and kitchen wall.

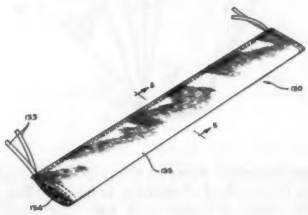
In a modification, the structure is made in two adjoining sections to facilitate construction and servicing.

3,596,440
GAS SCRUBBER
Raymond W. Nutter, Fairview, and Frederick M. Sitter, Erie, both of, Pa., assignors to Van-Air, Incorporated, Erie, Pa.
Filed May 14, 1969, Ser. No. 824,510
Int. Cl. B01d *50/00*
U.S. Cl. 55—320 **8 Claims**



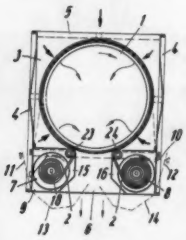
An air or gas filter or scrubber adapted for disposal downstream from an air or gas compressor, for removing hydrocarbons from the compressed air or gas stream. The scrubber comprises an enclosure containing an elastic bed of curled fibrous material of generally open pore nature through which the compressed air or gas passes, with such bed scrubbing the air or gas and soaking up and retaining hydrocarbons, dirt and other contaminants. A drain is provided in the bottom of the enclosure for removing hydrocarbon and other contaminant solution from the mechanism as it drains down from the bed. The bed material may have a bulk density of between approximately 12 to 22 pounds per cubic foot, and results in very little pressure drop through the mechanism.

3,596,441
FILTERING DEVICE FOR VEHICLE EXHAUST
Ernest W. Lundahl, P.O. Box 2525, Idaho Falls, Idaho
Continuation-in-part of application Ser. No. 689,616, Dec. 11, 1967, now abandoned. This application Nov. 26, 1968, Ser. No. 795,375
Int. Cl. B01d *46/02*
U.S. Cl. 55—376 **3 Claims**



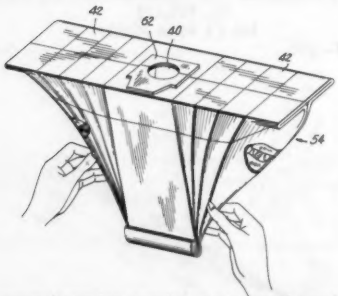
A filtering device is described which attaches temporarily to the exhaust pipe of an internal combustion engine powered automobile. The device includes a multiply bag operating to filter out moisture and solid particles discharged from the exhaust pipe.

3,596,442
DRUM FILTER
Gerhard Max Neumann, Berlin-Dahlem, Germany, assignor to Delbag-Luftfilter G.m.b.H., Berlin, Germany
Filed June 23, 1969, Ser. No. 835,543
Claims priority, application Germany, June 22, 1968, P 17 57 865.3
Int. Cl. B01d 46/20
U.S. Cl. 55—354 22 Claims



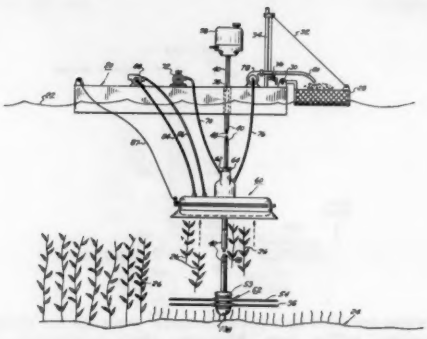
A drum filter for filtering a stream of gas, comprising a boxlike casing which can be connected in horizontal and/or vertical juxtaposition with other like casings, a drum having a gas-permeable circumferential surface adapted to be enveloped at least partially by a travelling filter cloth drawn from an idler spool and wound on a driven spool, the spools each being mounted in a spool chamber and being rotatable about axes parallel to the axis of the drum, the spool chambers each having at least one hinged access door disposed in a plane parallel to the axis of the drum, a gas entry in one side of the casing and a gas exit in another side of the casing, the location of the entry and exit being chosen according to the desired direction of flow of the gas stream through the casing and filter and the construction being such that the gas stream can enter the casing either radially or axially of the drum dependent upon the location of said entry.

3,596,443
VACUUM CLEANER FILTER BAG
Howard Zev Goldberg, Monsey, N.Y., assignor to Modern Dust Bag Co., Inc., West Haverstraw, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,058
Int. Cl. B01d 46/02
U.S. Cl. 55—376 8 Claims



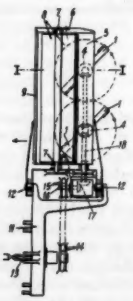
The present invention pertains to a new and novel bag construction and the method of making same. The bag is formed of a flexible sheet material and has fold lines thereon, whereby the bag is formed by folding the same on the fold lines and results in the formation of a self-opening square construction. The bag may also have side pleats to result in a small compact bag which is readily expansible, which is readily adapted for manufacture on existing machinery and is particularly adapted for use in the manufacture of disposable vacuum cleaner filter bags.

3,596,444
UNDERWATER WEED CUTTER
Joseph D. Beattie, 22794 Almond, East Detroit, Mich.
Filed Feb. 5, 1969, Ser. No. 796,697
Int. Cl. A01d 45/08
U.S. Cl. 56—9 32 Claims



An underwater weed-cutting device comprising a longitudinally adjustable shaft for immersing in a body of water, a drive motor mounted at one end of the shaft and cutting blades mounted at the other end of the shaft. A submersible float is adjustably mounted on the shaft intermediate its ends and contains an independently driven chopper mechanism an a suction device adapted to suckup and finely chop the weeds cut off at the bottom of the body of water for disposal, the intermediate submersible float being provided to maintain balance of the cutting device, to adjustably raise or lower the cutting blades in relation to the various depths of the body of water, and to vary the height of the chopper mechanism relative to the height of the weeds.

3,596,445
A DEVICE FOR MOWING CROP
Theodorus Lievers, Gaanderen, and Herbert Vissers, Nieuw-Vennep, both of, Netherlands, assignors to Landbouwwerktuigen-en Machinefabriek H. Vissers N.V., Nieuw-Vennep, Netherlands
Filed Jan. 2, 1968, Ser. No. 694,995
Claims priority, application Netherlands, Jan. 13, 1967, July 14, 1967, Sept. 27, 1967, 67.00613;67.09251;67.13134
Int. Cl. A01d 43/00
U.S. Cl. 56—13.7 24 Claims



A method and a device for mowing crop according to which the crop is cutoff by one or more mowing elements and the invention has for its object to reduce the frictional resistance which the mowing elements encounter at the crop cutoff.

The mowing elements cooperate with a conveying member which raises the crop and takes it up during the cutting off and discharges it after the cutting off. To this end a convey-

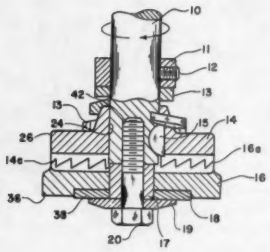
ing member e.g. shaped as a rotor is provided and cooperates with the mowing elements for raising the crop and discharging it after this cutting off, so that the mowing elements do not come into contact with the crop cutoff.

3,596,446

ADAPTER FOR YIELDABLY CONNECTING THE BLADE OF A ROTARY LAWN MOWER TO THE DRIVE SHAFT

Gideon M. Bryan, Winston-Salem, N.C., assignor to Sidney C. Whiteheart, Winston-Salem, N.C., a part interest

Filed Mar. 6, 1969, Ser. No. 804,953
Int. Cl. A01d *35/26*
U.S. Cl. 56—10.3 **8 Claims**



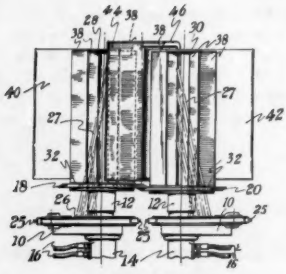
This invention is directed to an adapter for yieldably connecting the drive shaft of a rotary lawn mower with the mower blade, and more particularly to an adapter comprising a pair of clutch plates, each having a plurality of teeth thereon, the faces being normally urged into engagement with each other, so that the teeth mesh. One of the clutch plates is slidably mounted on the drive shaft, and the other plate, to which the blade is attached, is rotatable with respect to the drive shaft when the two clutch plates are disengaged. The opposing faces of the two clutch plates are resiliently urged together during operation of the mower forming a drive means for the blades. However, when a large rock, stake, or other unyieldable object is encountered by the blade, the resilient clutch connection allows the two clutch plates to separate sightly permitting the drive shaft to continue rotating, although the blade itself remains stationary.

3,596,447

CROP TOPPER

Sam Robert Makeham, and Keith Leonard Ruback, both of Bundaberg, Queensland, Australia, assignors to Crichton Industries Pty. Ltd., Bundaberg, Queensland, Australia

Filed Feb. 5, 1969, Ser. No. 796,843
Int. Cl. A01d *45/02*
U.S. Cl. 56—63 **10 Claims**



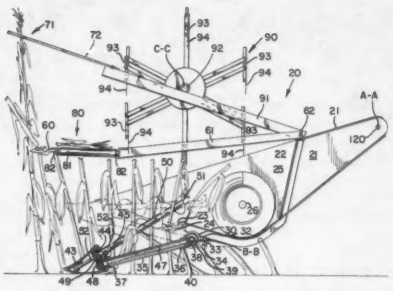
A harvesting machine including a crop-cutting apparatus particularly for cutting the tops off a standing crop. The cutting apparatus includes a pair of rotatable knife discs rotatable on substantially vertical axes and having a slight overlap in cutting area. A pivoted vertically extending guide vane directs cut material toward one knife or the other. A drum is carried above each knife and rotates therewith. The drums have radially extending crop moving paddles thereon. Curved vertically extending guide plates are located to the rear of the drums and intersect at the pivot axis of the guide vane. The knives and drums are individually driven and means are provided to move the guide vane.

3,596,448

CORN-HARVESTING ATTACHMENT

Ernest Melville Van Buskirk, East Moline, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed June 3, 1968, Ser. No. 733,884
Int. Cl. A01d *45/02*
U.S. Cl. 56—63 **1 Claim**



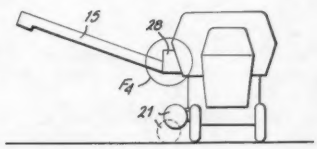
A harvester including a grain platform adapted to harvest corn comprising a plurality of ground-engaging divider points pivotally mounted and transversely spaced across the platform, for directing the stalks rearwardly toward the sickle. A vertically adjustable topping cutter is arranged to sever the stalks above the ear-bearing area and a deflector and a trash conveyor are provided for disposing of the severed stalk tops. A reel is located above the sickle and rearwardly of the topping cutter for influencing the ear bearing portion of the stalk that has been separated to fall upon the platform bed where it is collected and fed to the combine.

3,596,449

COMBINE WITH MEANS FOR ADDING A PRESERVATIVE TO HARVESTED GRAIN

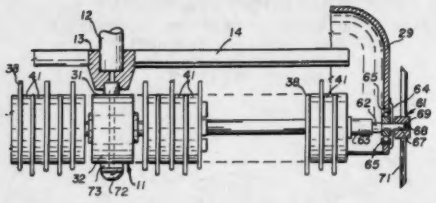
Edward William Rowland-Hill, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed May 29, 1969, Ser. No. 828,894
Claims priority, application Belgium, Sept. 13, 1968, 48,293
Int. Cl. A01d *41/12*
U.S. Cl. 56—124 **17 Claims**



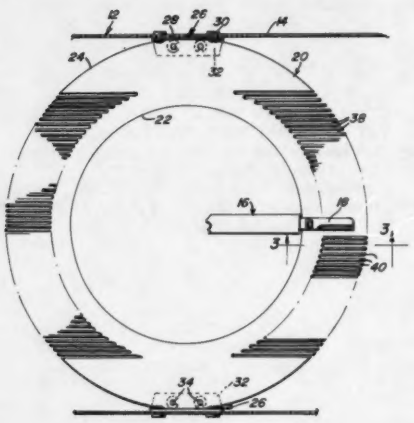
A combine has a grain storage tank with an upwardly inclined grain discharge pipe containing a screw conveyor. A preservative applicator is mounted on the grain discharge for delivery of propionic acid to grain passing into the discharge conveyor to preserve moisture-containing grain in storage. In one form the applicator is positioned at the intake of the discharge pipe and contains the screw conveyor. The propionic acid discharge in the applicator is connected through a pump and control valve to a tank storing propionic acid. In another form the screw conveyor adjacent the pipe discharge has jets connected to an inner pipe concentric to the tubular shaft of the screw.

3,596,450
LAWN MOWER ATTACHMENTS
Richard A. Bowers, 1029 E. 3rd St., Florence, Colo.
Continuation-in-part of application Ser. No. 522,608, Jan. 24, 1966, now Patent No. 3,455,398. This application June 19, 1969, Ser. No. 835,911
Int. Cl. A01d 43/02
U.S. Cl. 56—193 12 Claims



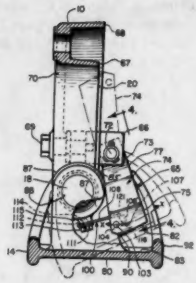
An adapter system and attachments therefor which utilizes the structural and drive features of powered lawn mowers inclusive of the cutter blade-fan to provide additional power rake, brush, edger and nonscalping features. A drive connection is provided to power a horizontally disposed shaft upon which flails and similar edger or lawn dressing tools may be positioned for contact with a lawn or turf surface. Flexible tines or flails of a power-rake attachment are held in operative position by a plurality of intermeshing disc supports. A combination cutter blade-fan is used in alternate positions, and a mounting component therefor provides a nonscalping feature.

3,596,451
LAWN MOWER CUTTER BAR
Frank M. Spear, 625 Todd Ave., Ellwood City, Pa.
Filed July 24, 1969, Ser. No. 844,255
Int. Cl. A01d 55/18
U.S. Cl. 56—255 6 Claims



In a rotary lawn mower having a housing with a depending side skirt and a centrally mounted rotary cutting blade, a combination cutter bar and blade guard comprising a flat annular member positioned in underlying concentric relation to the rotary blade and mounted on the opposed sides of the housing by angle brackets. The annular member, along the forward and rearward directed portions thereof, has a series of spaced parallel slots defined therein, forming grass receiving and guiding fingers, these slots extending inwardly from the outer periphery of the member and terminating short of the inner periphery of the member. The path of the outer cutting ends of the cutter blade overlies the fingers for engagement with and the cutting of grass guided thereby.

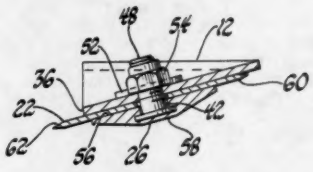
3,596,452
GAG-LIMITING DEVICE FOR A MOWER
Thomas J. Scarnato, Barrington; Paul C. Gordon, Hinsdale, and Craig M. Lawler, Downers Grove, all of, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 2, 1970, Ser. No. 80
Int. Cl. A01d 55/02
U.S. Cl. 56—286 6 Claims



A gag lift-limiting device for a mower comprising a pivoted latch having an upswung position disengaged from a cutter which is pivoted on a mower frame to permit the mower to be pivoted to transport position, the latch in its raised position having a center of gravity close to the pivot point so that the latch automatically drops from raised position to working position due to vibrations developed from operation of the mower.

A releasable lock to the latch is provided for releasably holding the latch from accidentally swinging out of gag-limiting position once the latch is so positioned.

3,596,453
MOWER BLADE ASSEMBLY
Derward G. Smith, 3334 Renault Drive, Flint, Mich.
Filed Nov. 25, 1969, Ser. No. 879,663
Int. Cl. A01d 55/18
U.S. Cl. 56—295 10 Claims

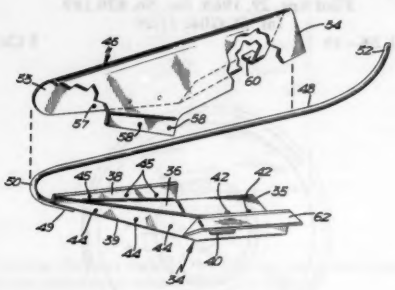


A mower blade assembly for rotary mowers comprising a cutter bar, a pair of rectangular blades, each having two cutting edges, and a pair of blade retainer plates. The plates are provided with a fixed bolt for fastening the plates and blades to the bar and with a pair of cylindrical projections for preventing the transfer of shear loads from the blades to the bolt.

3,596,454
DIVIDER BOARD FOR WINDROWER
Wallace Kluck, Route 1, Rothsay, Minn.
Filed June 18, 1969, Ser. No. 834,413
Int. Cl. A01d 63/04
U.S. Cl. 56—314 3 Claims

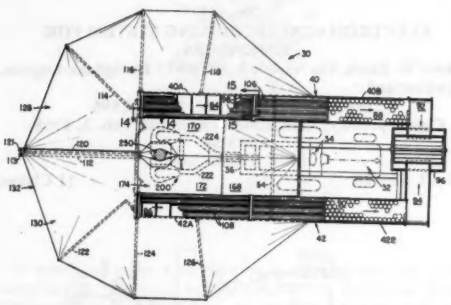
For use on a windrower, an improved grain divider having a grain separating nose portion projecting forwardly in front of the windrower's cutting sickle and a substantially upright divider section projecting rearwardly over a grain-receiving conveyor, the divider section terminating in front of the rear

frame structure of the transverse platform on which the conveyor is supported, thereby providing an unobstructed



discharge opening through which cut grain stalks may drop freely onto the canvas conveyor.

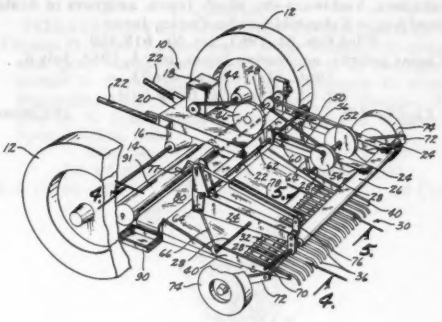
3,596,455
FRUIT-HARVESTER
Philip R. Adrian, Escalon, Calif., assignor to Fruit Harvesting Co., Inc., Escalon, Calif.
Filed May 1, 1969, Ser. No. 820,717
Int. Cl. A01g *19/06*
U.S. Cl. 56—329 **9 Claims**



A device for harvesting fruit or the like from a tree, the device including a pair of conveyors disposed on either side of the trunk of the tree, sheet means downwardly sloping from the trunk of the tree toward the conveyors to feed fruit falling thereon toward the conveyors, and a sheet of generally bowllike configuration, the sheet being made up of two sheet portions to feed fruit falling thereon toward the conveyors. The sheet portions are retractable so that they may be folded up. Longitudinal resilient members, in spaced-apart, staggered relationship, are positioned to receive fruit fed toward the conveyor and limit the acceleration of the fruit, meanwhile allowing it to fall therethrough and to the conveyors without damage.

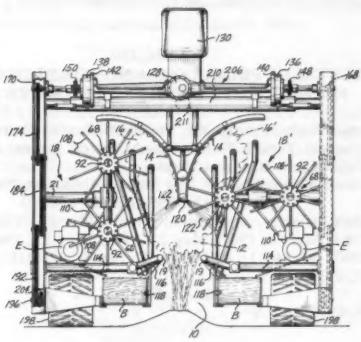
3,596,456
STRAWBERRY-HARVESTING DEVICE, assignor to Graeme R. Quick, Ames, Iowa and Iowa State University Research Foundation, Ames, Iowa
Filed Aug. 19, 1968, Ser. No. 753,553
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **4 Claims**

A device for harvesting strawberries including a pickup unit having spaced-apart teeth and a roller extending thereunder and being connected to a vibration means for imparting arcuate vibratory motion to the pickup unit for gathering, stripping and conveying strawberries to a collecting unit. A platform may extend between the pickup unit and a cross conveyor in communication with the collecting unit and forced air may be directed from the pickup unit along



the platform rearwardly to provide an air elevator for the berries and also separate the foreign material therefrom.

3,596,457
FRUIT HARVESTER
Ernest L. Van Tine, Bellevue, Wash., and Wesley R. Wagner, 5332 S. Fountain St., Seattle, Wash., assignors to said Wagner by said Van Tine
Filed Oct. 24, 1969, Ser. No. 869,044
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **19 Claims**



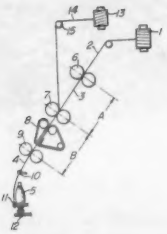
The harvester is a self-propelled vehicle having two side assemblies adjustably connected together near the top of the vehicle. A divider depends from the interconnecting frame structure downwardly into a front-to-rear tunnel defined by and between the two side assemblies. A row of fruit collector boxes is supported on each side of the tunnel. The divider divides the bushes traveling relatively through the tunnel into two parts and deflects the parts laterally outwardly into the paths of the bush shakers, generally above the collector boxes. Each shaker includes a wheel mounted for rotation about a fixed horizontal support extending longitudinally of the vehicle. This support is rotated for swinging the wheel upwardly through fruit ladened branches. The wheel includes a plurality of radial tines and means for reciprocating it back-and-forth on its support. Air screens are provided for directing the falling fruit towards the collector boxes. The vehicle drive mechanism includes differential gearing mechanism having a pair of output shafts. A system of chains and sprockets drivingly connects each output shaft to a plurality of small diameter drive wheels on its side of the vehicle. The output shafts are provided with independently controllable brakes used for steering the vehicle.

3,596,458

SPUN YARN OF ELASTIC FIBER AND PREPARATION THEREOF

Hiroshi Nakano, Suita-shi; Hideo Takai, Fuji-shi, and Fumio Nakajima, Yoshiwara-shi, all of, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 24, 1967, Ser. No. 618,469
Claims priority, application Japan, July 6, 1966, July 6, 1966, 41/43692;41/43693
Int. Cl. D01g *1/08*; D02g *3/04*
U.S. Cl. 57—156 18 Claims



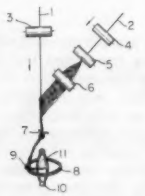
A spun yarn of a 100 percent elastic fiber or of an elastic fiber blended with a hard fiber. The yarn is prepared by stretching and heat setting a multifilament yarn or tow of the elastic fiber, stretch breaking, drawing, if necessary, and twisting. The blended yarn is prepared by, after the stretch breaking of the basic elastic fibers and before the drawing, blending with hard fiber roving. The yarn is prepared by employing a modified direct spinning machine equipped with top and bottom aprons in a stretch breaking zone between the back roll and the intermediate roll; the aprons being driven by the revolution of the intermediate roll.

3,596,459

PROCESS OF PRODUCING A NONSTRETCH OR LOW-STRETCH COMPOSITE YARN OF SUPER HIGH BULKINESS

Osamu Wada, Ibaragi-shi; Yoshiyuki Sasaki, Ibaragi-shi, and Masaaki Tomiji, Kashiwara-shi, all of, Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 701,138, Mar. 4, 1968, Pat. No. 3,495,393
Filed July 1, 1969, Ser. No. 838,203
Claims priority, application Japan, Mar. 8, 1967, Mar. 8, 1967, Mar. 8, 1967, May 23, 1967, May 23, 1967, May 23, 1967; 42/14641; 42/14643; 42/14644; 42/43351; 42/43352; 42/43353
Int. Cl. B65h *81/06*
U.S. Cl. 57—160 5 Claims



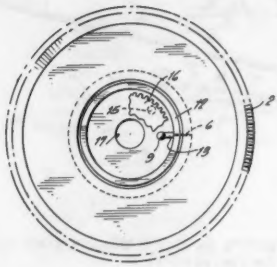
Process of producing a nonstretch or low-stretch composite yarn of super high bulkiness. At least one core yarn is fed, and at least one covering yarn having a plurality of filaments is tensioned and relaxed and is then fed in an overfed state to a wrapping point where it is wrapped around the core yarn. The rate of delivery of the covering yarn to the wrapping point is such that the ratio of the length of the covering yarn is from 110—300 percent of the length of the core yarn per unit length of the composite yarn. The composite yarn has a final twist imparted thereto.

3,596,460

ALARM DEVICE FOR A HOROLOGICAL INSTRUMENT

Paul Wuthrich, Woodbury, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Apr. 29, 1969, Ser. No. 820,189
Int. Cl. G04c *21/20*
U.S. Cl. 58—19 5 Claims



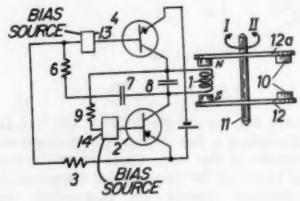
A horological instrument includes a source of electrical energy and an electrical audible alarm. The circuit between the energy source and the alarm is normally open. A setting stem rotates a geared disc. The disc carries a conductive track and a conductive contact point. The contact point, normally twice a day, contacts a portion of the hour wheel, closing the circuit and allowing the alarm to sound.

3,596,461

ELECTROMAGNETIC DRIVING SYSTEM FOR TIMEPIECES

Robert W. Reich, Via Noseda 8, CH-6977 Ruvigliana-Lugano, Switzerland

Filed Aug. 22, 1968, Ser. No. 754,596
Claims priority, application Switzerland, Feb. 2, 1968, 1,903/68
Int. Cl. G04c *3/04*
U.S. Cl. 58—28 11 Claims



In an electromagnetic driving system for timepieces during the first half-oscillation of the oscillating member an astatic magnet system swings over only one coil inducing therein an impulse which opens two complementary transistors. The current flowing through the transistors and the coil creates a repellent impulse on the magnet system. The circuit includes blocking means rendering ineffectual the impulse induced in the coil during the second half-oscillation.

3,596,462

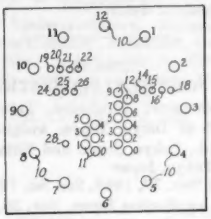
ELECTRONIC CLOCK

Royce Hayes, 2236-A Old Stone Mountain Road, Chamblee, Ga.

Filed Jan. 31, 1969, Ser. No. 795,595
Int. Cl. G04b *19/00*
U.S. Cl. 58—50 5 Claims

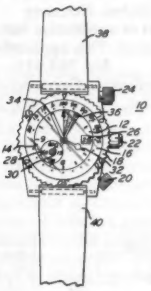
An electronic clock in which the time is indicated by a combination of hour indications and decimal minute indications. A basic time input is successively divided by factors to

provide signals that control lights, the lights including a first series of lights to indicate the hour, a second series of lights



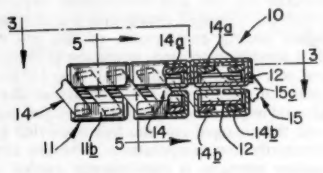
to indicate the tens digit of the minute, and a third series of lights to indicate the units digit of the minute.

3,596,463
WATCH
Richard E. Rudolph, Elkins Park, Pa., assignor to Richard E. Rudolph, Philadelphia, Pa.
Filed June 23, 1969, Ser. No. 835,370
Int. Cl. G04b *37/12*
U.S. Cl. 58—152 **5 Claims**



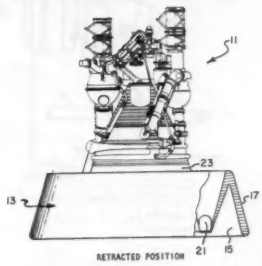
A watch to assist a smoker to break the smoking habit comprises a standard watch mechanism including hour, minute and second indicators, an additional minute indicator that is resettable to zero by the momentary depression of a first switch, a counter with a rotatable indicator that is incrementally displaced by the momentary depression of a second switch and a manually rotatable graduated dial mounted about the periphery of the watch crystal.

3,596,464
EXPANSIBLE LINKAGE FOR USE IN MAKING A WATCH BRACELET OR SIMILAR ARTICLE
Stephen F. Bert, West Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Filed Apr. 21, 1969, Ser. No. 818,007
Int. Cl. F16g *13/24*
U.S. Cl. 59—79 **12 Claims**



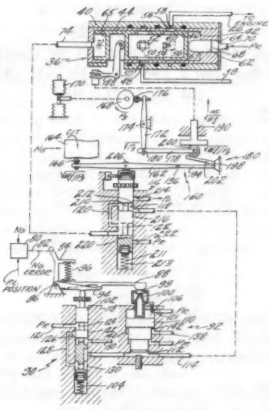
An expansible linkage for use as a bracelet having two rows or links, each link of one row having its longitudinal centerline located substantially above the longitudinal centerline of the corresponding link of the other row when the linkage is in its contracted position and viewed from the side.

3,596,465
INFLATABLE TRANSPIRATION COOLED NOZZLE
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Donald E. Pryor, Huntsville, Ala.; Benjamin K. Holmes, Huntsville, Ala.; James R. Thompson, Jr., Decatur, Ala.; Charles N. Scott, North Canton, Ohio, and William W. Sowa, Medina, Ohio
Filed Mar. 12, 1970, Ser. No. 18,982
Int. Cl. F02k *1/08;* **B63h** *11/10;* **D03d** *15/02*
U.S. Cl. 60—271 **10 Claims**



A rocket engine nozzle skirt for increasing the expansion ratio of a main engine nozzle. The skirt is fabricated from a woven, double wall, fabric material which can be folded back around the main nozzle and later inflated to achieve its desired shape. The exterior surface of the nozzle extension is coated with a suitable sealant leaving the inner wall unsealed and with a porosity such that the inflation gas bleeds through to provide transpiration cooling of the nozzle skirt.

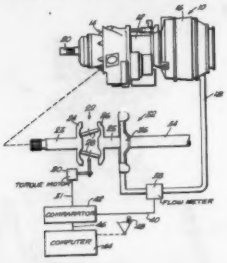
3,596,466
ISOCHRONOUS GOVERNING SYSTEM WITH ACCELERATION/DECELERATION LIMITING MEANS
Donald E. Anschutz, Wilbraham, Mass., and Lawrence S. Smith, Simsbury, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 20, 1970, Ser. No. 21,261
Int. Cl. F02c *9/08*
U.S. Cl. 60—39.28 **9 Claims**



A fuel control for a turbine-type power plant is designed to include an isochronous governing system wherein both integrating and proportional valves control servo fluid to the actuator so that the velocity of the actuator is proportional to the flow into and out of it whereby the stroke rate is a func-

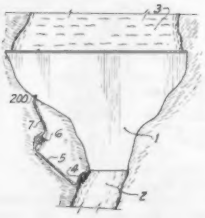
tion of the error plus the rate of change of the error in combination with means for controlling the acceleration and deceleration of the power plant.

3,596,467
INTEGRATED FUEL CONTROL SYSTEM FOR A GAS TURBINE ENGINE
Paul A. Avery, Shelton, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Oct. 31, 1969, Ser. No. 872,938
Int. Cl. F02c *9/06*
U.S. Cl. 60—39.28 **14 Claims**



The disclosure illustrates an integrated fuel control system for a gas turbine engine. The system comprises a stepless variable speed ratio toroidal-type transmission driven by a rotor assembly of the engine. The output from the variable-speed transmission is connected to an alternator and a centrifugal fuel pump. The pump receives fuel from a suitable source and pressurizes it for delivery into the engine. An electrical computer generates a scheduled fuel flow signal and a flow transducer generates an actual fuel flow signal. These signals are fed to a comparator which supplies the resultant output to a torque motor. The torque motor causes a change in the speed ratio of variable speed drive to change the centrifugal pump r.p.m. and the resultant fuel flow to the engine. The electrical output of the alternator is used by the computer, comparator and actual flow-generating elements and other engine control devices. In an alternate design the variable-speed drive and centrifugal pump are used to maintain a constant pressure differential across a fuel flow metering valve which is driven by a hydromechanical fuel control.

3,596,468
FISH LADDERS
Herbert K. Fairbanks, SR 35, Box 195, St. George, Maine
Filed June 2, 1969, Ser. No. 836,685
Int. Cl. E02b *8/08*
U.S. Cl. 61—21 **5 Claims**

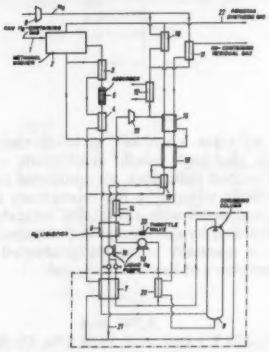


A fish ladder having located within one body of water a chamber which is selectively opened and closed to isolate fish therein, and passage means for delivering into the chamber from a second body of water at a higher elevation a predetermined minimum flow of water when the chamber is opened to thereby attract fish therein, and a predetermined maximum flow of water when the chamber is closed whereby fish isolated within the chamber are subjected to increased pressure and instinctively swim through passage means and into the second body of water.

3,596,469
PROCESS FOR THE STABILIZATION OF SOIL
Einosuke Higashimura; Shunsuke Tazawa, and Eiichi Nakamura, all of Tokyo, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan and Nitta Chemical Industry Co., Ltd., Tokyo, Japan
Filed Nov. 29, 1968, Ser. No. 781,299
Claims priority, application Japan, Nov. 30, 1967, 42/76419
Int. Cl. E02d *3/12*
U.S. Cl. 61—36 **13 Claims**

In the stabilization of soil by injecting into the soil a mixture comprising a water-soluble divinyl compound, a water-soluble vinyl compound and a redox catalyst, a mixture of an amine and a reducing metal complex is used as the reducing component of the redox catalyst, whereby the soil can be made particularly great in strength in a short period of time.

3,596,470
PROCESS AND APPARATUS FOR THE LOW-TEMPERATURE SEPARATION OF A HYDROGEN-RICH GAS MIXTURE
Fritz Jakob, Kreis Wolfratshausen, Germany, assignor to Linde A.G., Wiesbaden, Germany
Continuation-in-part of application Ser. No. 550,782, May 17, 1966, now abandoned. This application Aug. 1, 1968, Ser. No. 767,011
Claims priority, application Germany, May 18, 1965, G 43635
Int. Cl. F25j *3/00, 3/08*
U.S. Cl. 62—20 **16 Claims**

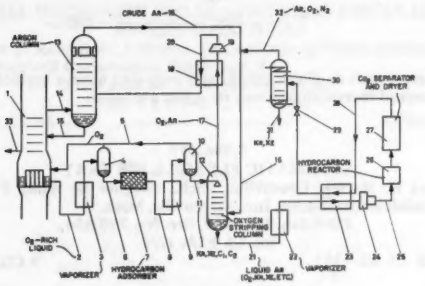


In a process for the low-temperature separation of a hydrogen-rich gas mixture by scrubbing out at least a portion of the higher boiling components of the gas mixture by nitrogen in a scrubbing column, operating at about 80 to 210 atm. a., and at a temperature of about 1° to 15° C. above the freezing point of nitrogen at the pressure of the scrubbing column, several improvements in the technique employed for cooling both the nitrogen and the hydrogen-rich gas mixture to the necessarily low temperatures, wherein after the gas mixture and/or nitrogen is conveniently cooled in indirect heat exchange with vaporizing residual fluid from the scrubbing column, it is further cooled in indirect heat exchange with both residual fluid and ammonia synthesis gas withdrawn directly from the scrubbing column.

3,596,471
PROCESS FOR RECOVERING A MIXTURE OF KRYPTON AND XENON FROM AIR WITH ARGON STRIPPER

Martin Streich, Nieder-Eschbach, Germany, assignor to Messer Griesheim G.m.b.H., Frankfurt, Germany

Filed Mar. 12, 1969, Ser. No. 806,415
Claims priority, application Germany, Mar. 15, 1968, P 16 67 639.4
Int. Cl. F25j *3/02, 3/08*
U.S. Cl. 62—22 **10 Claims**

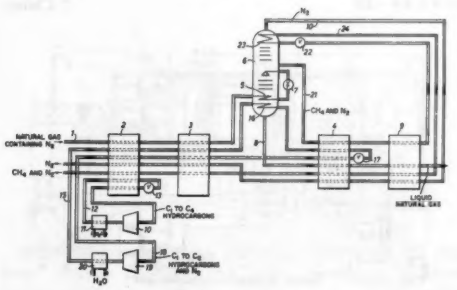


Oxygen-rich liquid from the bottom of the low-pressure column of a two-column air separation plant is partially vaporized, hydrocarbons are removed from the residual liquid, and the liquid is then stripped of oxygen by contact with gaseous argon. The stripped liquid is vaporized, the vapor is compressed, residual hydrocarbons in the vapor are burned, and the combustion products are removed from the vapor. Thereafter, the vapor is expanded into a rectifying column from the bottom of which a mixture of krypton and xenon is recovered. Desirably, the gaseous effluent from this rectifying column is further expanded into another rectifying column from the bottom of which argon is recovered.

3,596,472
PROCESS FOR LIQUEFYING NATURAL GAS CONTAINING NITROGEN

Martin Streich, Nieder-Eschbach, Germany, assignor to Messer Griesheim GmbH, Frankfurt, Germany

Filed Dec. 16, 1968, Ser. No. 784,124
Claims priority, application Germany, Dec. 20, 2967, P 15 51 611.7
Int. Cl. F25j *1/02, 3/02*
U.S. Cl. 62—28 **6 Claims**

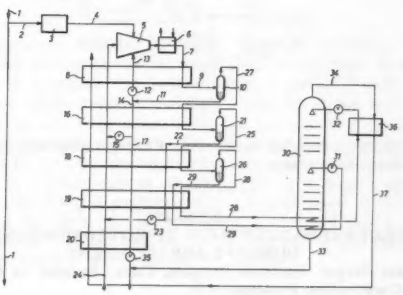


Natural gas containing nitrogen is cooled and liquefied by a cascade system having two closed refrigeration circuits operating on multicomponent refrigerant mixtures. The liquefied gas is distilled into three fractions: nitrogen, a mixture of nitrogen and methane, and liquid natural gas substantially free of nitrogen. The mixture of nitrogen and methane provides the refrigerant in a third and coldest open circuit of the cascade system to subcool the liquid natural gas to storage temperature.

3,596,473
LIQUEFACTION PROCESS FOR GAS MIXTURES BY MEANS OF FRACTIONAL CONDENSATION

Martin Streich, Niedereschbach, Germany, assignor to Messer Griescheim GmbH, Frankfurt am Main, Germany

Filed Dec. 24, 1968, Ser. No. 786,595
Int. Cl. F25j *3/00, 3/02, 3/06*
U.S. Cl. 62—28 **7 Claims**



A process for the liquefaction of gas mixtures by at least two open partial cycles with different boiling points includes premixing the gas mixture with the cycle media and by means of a compressor bringing it to an elevated pressure and subjecting it to a fractional condensation where the cycle media and the more difficulty boiling mixture constituents are precipitated as liquid fractions in separators. The liquid fraction of the first separator is divided into two partial streams. The first stream, which forms the first partial cycle, after expansion to an average pressure gives off coolness from cycle gas and gas mixture to be liquefied to the mixture streaming to the first separator and again conducts back to the compressor. The second stream is deep-cooled, expanded to about atmospheric pressure and admixed to the last cycle medium streaming back to the compressor. Furthermore, it is proceeded with the compressor of the subsequent separator accordingly, the expansion of the first partial streams occurring at average pressure until finally the liquid precipitating in the last separator after cooling of itself and expanding to about atmospheric pressure, gives off coolness to the gas mixture to be liquefied and to the other separated cycle media and is again conducted to the compressor.

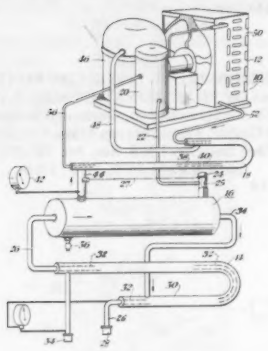
3,596,474
GAS-HANDLING APPARATUS AND METHOD

Alden T. Bloxham, Bridgeville, Pa., and Harry C. Fischer, Royal Oak, Md., assignors to Kellogg American, Inc., Oakmont, Pa., by said Harry C. Fischer

Filed Dec. 18, 1968, Ser. No. 784,597
Int. Cl. F25d *17/06*
U.S. Cl. 62—93 **16 Claims**

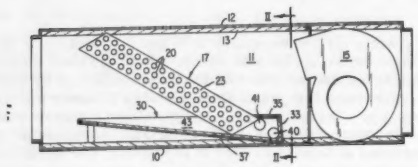
We disclose gas-handling apparatus comprising a primary evaporator, first conduit connections for establishing a flow path for a compressed gas and the like through said evaporator, second conduit connections for establishing a flow path of a refrigerant fluid through said primary evaporator in heat

exchanging relation with said gas path, a refrigerant unit coupled to said second conduit connections, and an auxiliary



evaporator coupled between said refrigerating unit and said primary evaporator.

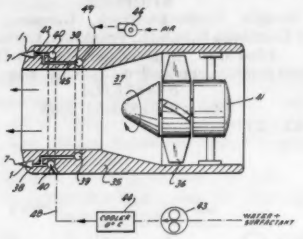
3,596,475
HEAT EXCHANGER WITH IMPROVED CONDENSATE DISPOSAL ARRANGEMENT
Isaac Berger, Hacienda Heights, Calif., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Sept. 19, 1969, Ser. No. 859,472
Int. Cl. F25d *21/14*
U.S. Cl. 62—285 **1 Claim**



A plate-finned coil unit diverges upwardly from the drain pan at an angle of less than 45° in the direction of the airflow. The lower end of the coil terminates in the pan in close spaced relation to an end wall thereof. The pan has a top wall extending from that end wall toward the lower end of the coil. This arrangement provides a sump for the collection of condensate from the coil when the fan coil unit is installed in either the vertical or horizontal position.

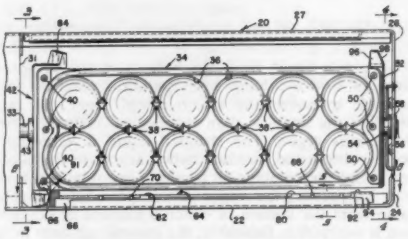
3,596,476
PROCESS AND SYSTEM FOR MAKING ARTIFICIAL SNOW
Fritz Jakob, Achmuhle; Gerold Tesar, Pullach, Isartal, and Karl-Heinz Kuhnlenz, Deisenhofen, all of, Germany, assignors to Linde Aktiengesellschaft, Holbriegelskreuth, Germany
Filed Mar. 26, 1969, Ser. No. 810,711
Claims priority, application Austria, Apr. 8, 1968, 3459/68
Int. Cl. F25c *3/02*
U.S. Cl. 62—347 **12 Claims**

Water under high pressure, cooled to approximately 0° C., is fed to a set of nozzles together with a high-pressure airflow serving as a dispersion agent to convert the issuing fluid into fine droplets which are discharged into a low-pressure airstream of subfreezing temperature. The water is advantageously precharged with ice crystals or other nucleating



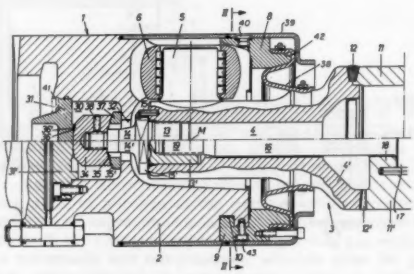
agents, such as silver iodide, and may also have a surfactant admixed therewith to lower its surface tension.

3,596,477
AUTOMATIC FLEXIBLE ICE TRAY
Earl K. Harley, Greenville, Mich., assignor to White Consolidated Industries, Inc., Greenville, Mich.
Filed Jan. 13, 1969, Ser. No. 790,654
Int. Cl. F25c *1/10*
U.S. Cl. 62—353 **5 Claims**



An automatic icemaker in which a flexible ice tray is twisted to loosen the ice blocks by rotating one end of the tray while restraining the other end. The continued rotation of the driven end of the tray releases the other end of the tray after a predetermined twisting motion of the tray has been effected.

3,596,478
CONSTANT VELOCITY JOINT COUPLING
Walter Komuzin, Bottrop, Germany, assignor to Gelenkwellenbau GmbH, Essen, Germany
Filed Jan. 28, 1970, Ser. No. 6,506
Claims priority, application Germany, Jan. 31, 1969, G 69 03 751
Int. Cl. F16d *3/30*
U.S. Cl. 64—21 **7 Claims**



Constant velocity joint coupling includes one joint half-formed with a plurality of axially parallel concave race surfaces defining a number of cylindrical spaces therebetween;

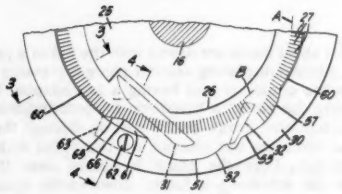
and another joint half-including a hub having at least three arbors extending radially in stellate form therefrom, and a spherically convex roller-shaped joint member rotatably and axially displaceably mounted on each of the arbors, the joint members being received respectively in the cylindrical spaces, the hub having a free end formed with a spherically convex axial bearing surface having a center of curvature located at the point of intersection of the longitudinal axis of the hub and the axes of the joint members, and the one joint half being formed with a support bearing surface cooperatively engaging the axial bearing surface.

3,596,479

DIAL MECHANISM FOR MULTISTATION CIRCULAR KNITTING MACHINES

John F. Remlinger, Lebanon, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1970, Ser. No. 5,697
Int. Cl. D04b *15/02, 15/61*
U.S. Cl. 66—95 **3 Claims**



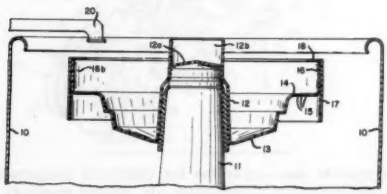
Dial mechanism for a multistation circular knitting machine adapted to form multifeed turned welt portions on tubular fabrics, the dial mechanism including transfer bits, cam means at one of the knitting stations for moving the transfer bits to engage the transfer course of the makeup or starting courses of the welt and for then moving the transfer bits to a first holding position to hold the transfer course as other makeup courses are formed at the other knitting stations and a further cam means adjacent one of the other knitting stations for moving the transfer bits to a second holding position to facilitate severance of yarns introduced into and removed from knitting action during the formation of the welt by yarn severing means associated with the dial.

3,596,480

LINT FILTERS AND BLEACH-DISPENSING DEVICES

Peyton W. Douglas, Bemus Point, N.Y., assignor to Blackstone Corporation

Division of Ser. No. 749,482, Aug. 1, 1968, Pat. No. 3,520,156
Filed Jan. 30, 1970, Ser. No. 7,031
Int. Cl. D06f *39/02, 39/10*
U.S. Cl. 68—17 A **4 Claims**



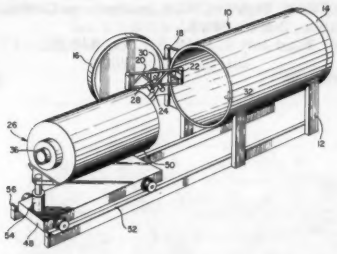
A combination lint filter, bleach or other wash and rinse water additive dispenser and fabric conditioner dispenser adapted for mounting on the agitator post of a clothes washer having a recirculating system and a spin-rinse cycle which receives wash-rinse water from the recirculating system, filters it and dilutes and delivers the bleach to the tub of the clothes washer and thereafter dispenses fabric conditioner during the spin-rinse cycle.

3,596,481

BEAM DYEING APPARATUS

Harold R. Wilcox, 6 Howard Road, Maynard, Mass.

Filed Nov. 28, 1969, Ser. No. 880,693
Int. Cl. B05c *8/02*
U.S. Cl. 68—150 **9 Claims**



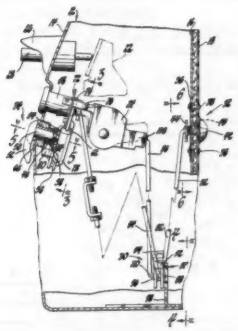
A pressure chamber rotatably supports internally a removable perforated tubular beam about which fabric to be treated is wrapped. The hollow beam is provided with a propeller rigidly mounted coaxially within the beam and is adapted to rotate the beam under the pressure of a dyeing liquid pumped therethrough. The dye beam is supported at one end by a rotary seal communicating with a conduit connected to a pump and at its other end by a hinged gate mounted to swing in proximity with a hinged hatch. A dolly having a cantilevered and hydraulically operated cradle is mounted on tracks for movement in and out of the vessel when the hatch is open to replace dye beams.

3,596,482

DOOR-LOCKING ARRANGEMENT

Walter Pollak, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

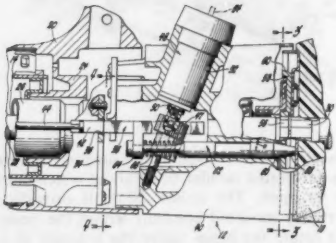
Filed Jan. 26, 1970, Ser. No. 5,553
Int. Cl. E05b *65/32*
U.S. Cl. 70—101 **4 Claims**



A locking lever control arrangement on a vehicle door having a latch mechanism with a locking lever which automatically returns from an unlocked to a locked position upon closing movement of the door includes a three position internal control member on the door inner panel, a two position external control member on the door outer panel, a bellcrank, a blocking member and draft links connecting the internal control member to the bellcrank, the bellcrank to the locking lever and the bellcrank to the blocking member. The external control member is operable to move the locking lever from locked to unlocked position and the internal control member is operable upon movement to one position to rotate the blocking member to a blocking position preventing movement of the external control lever and upon movement to another position to move the locking lever from locked to

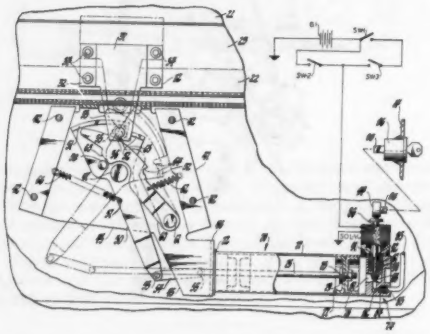
unlocked position, and the locking lever is operable upon automatic movement from the unlocked to the locked position to move the internal control member to the third of the three positions thereof.

3,596,483
STEERING COLUMN LOCK
Harold V. Elliott, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 9, 1969, Ser. No. 840,282
Int. Cl. B60r 25/02
U.S. Cl. 70—186 3 Claims



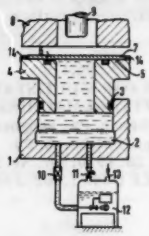
A steering column lock is provided with a lock bolt selectively engageable with a keeper on the steering shaft component of the steering column to hold the latter against rotation, the lock bolt being provided with a tapered head engaging the keeper and operative in the presence of predetermined large amounts of torque on the steering shaft component to provide a force component tending the bolt to move out of its locked position.

3,596,484
CLOSURE LATCH
Theodore F. Peters, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 31, 1969, Ser. No. 846,539
Int. Cl. E05b 51/02, 65/19
U.S. Cl. 70—240 6 Claims



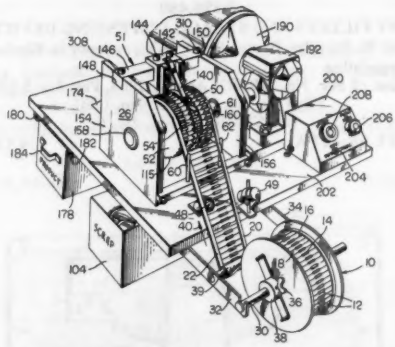
A closure latch for a vehicle deck lid or the like includes a striker secured to the deck lid in cooperative relation to a latch pivotally connected to the vehicle body for movement from a first or unlatched position out from engagement with the striker to a second or latched position engaging the striker to pull it, thereby pulling the deck lid firmly against the vehicle body with a weather seal compressed between the deck lid and the vehicle body. A latch hook is pivotally connected adjacent to the latch and is normally biased to engage the latch and retain it in the first position but is adapted to be contacted by the striker for disengagement from the latch to permit movement of the latch by a differential fluid pressure operated piston or by rotation of the latch hook as effected by contact with the striker.

3,596,485
HYDROMECHANICAL METHOD AND DEVICE FOR THE REVERSE REDRAWING OF SHEET METAL
Eugen Burk, Traunstein, Germany, assignor to Siemens-Electrogerate G.m.b.H., Berlin & Munich, Germany
Filed Sept. 11, 1969, Ser. No. 857,030
Claims priority, application Germany, Sept. 12, 1968, P 17 77 153.8
Int. Cl. B21d 26/04
U.S. Cl. 72—57 7 Claims



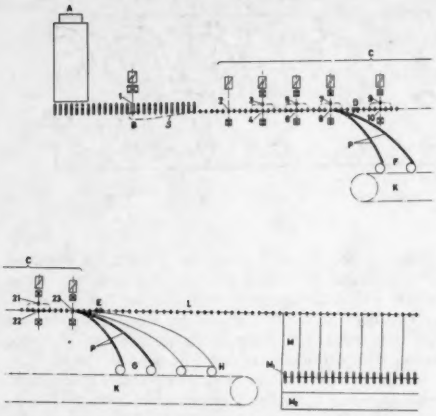
Blanks for sheet metal are drawn with the aid of a pressure container, a liquid displacing annular plunger pressure tightly glidable in the container and having a top adapted for accommodating the blank, a holddown for pressing the blank against the top, and a draw punch passing through the holddown. The container and plunger are first filled with liquid up to the top. Then the blank is placed onto the top, whereafter the holddown is forced downwardly against the blank, thereby pressing the plunger into the container. The increasing liquid pressure in the container draws the blank to a shape bulging upwardly into the holddown. Thereafter, the blank is reversely redrawn into the pressure container by pressing the punch from above against the blank and downwardly into the container.

3,596,486
APPARATUS AND PROCESS FOR PRODUCING ELECTRICAL COMPONENTS
Werner Dolder, Greenville, Tenn., assignor to Magnavox Company
Filed Jan. 23, 1969, Ser. No. 793,381
Int. Cl. B21f 11/00; H01r ; B21d 31/02
U.S. Cl. 72—129 12 Claims



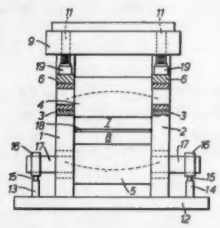
The process and apparatus for electrical components in which the electrical components are spaced regularly apart and are held by tapes which secure the ends of the leads of the components and carry them into position for processing so that the components are continuously fed by positive means to a continuously rotatable member which receives the components, trims the edges thereof and forms them to a prescribed shape, the process described being a continuous inflow of components for processing and a continuous outflow of finished components with the result that the speed of production of the finished electrical components is greatly increased.

3,596,487
ROLLING MILL
Karl S. O. Forsberg, Hogstengsgotau St., 77700 Swedjebacken, Morgardshammar, Sweden
Continuation of application Ser. No. 381,625, July 10, 1964, now Patent No. 3,422,654. This application Jan. 10, 1969, Ser. No. 790,295
Int. Cl. B21b 41/04, 41/10
U.S. Cl. 72—228 2 Claims



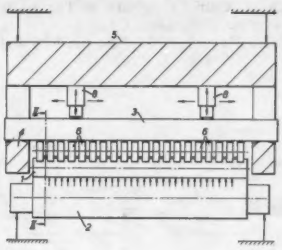
A continuous rolling mill plant for rod steel and wire having several rolling mill units each consisting of a pair of stands disposed side-by-side with a first stand of each pair being aligned in the direction of rolling, which stands form a finishing train permitting continuous rolling. The second stands of each pair permit repeater rolling. A runout roller table may be arranged below the finishing train in order to discharge the roller material from any stand. Instead of a runout roller, table coiler means may be arranged along and adjacent to the finishing train.

3,596,488
ROLLING MILLS
Harry Laurence Fred Bond, Hathersage, near Sheffield, England, assignor to Davy and United Engineering Company Limited, Sheffield, England
Filed Oct. 11, 1968, Ser. No. 766,851
Claims priority, application Great Britain, Oct. 13, 1967, 46868/67
Int. Cl. B21b 37/00
U.S. Cl. 72—237 2 Claims



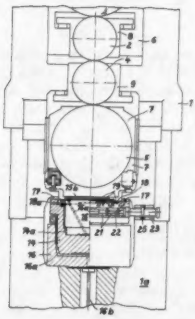
A four-high rolling mill is provided with backup roll bending on the lower backup roll only. The compensating bending moment is applied to the roll by means of controllable pressure applying means operably engaged with neck portions of the roll outboard of the bearing chocks and with a stiff beam extending beneath the housings and projecting outwardly therefrom. A four-high mill can be designed and erected without provision for backup roll bending and by later positioning the stiff beam beneath the housings, backup roll bending can be applied to the lower backup roll.

3,596,489
APPARATUS FOR PROCESSING SHEET AND STRIP MATERIAL
Saumyendranath Ball, Sheffield, England, assignor to Davy and United Engineering Company Limited, Sheffield, England
Filed Nov. 21, 1968, Ser. No. 777,738
Claims priority, application Great Britain, Nov. 21, 1967, Apr. 3, 1968, Apr. 3, 1968, 52852/67;15928/68;15929/68
Int. Cl. B21b 13/14, 29/00
U.S. Cl. 72—241 12 Claims



A machine for processing sheet and strip material such as a temper bending machine or a rolling mill has a pair of work rolls between which the material is processed and at least one of the rolls is engaged along its length by a plurality of casters which are supported on a flexible beam extending parallel to the axis of the roll. Means, conveniently in the form of hydraulic piston and cylinder assemblies are provided for flexing the beam to apply forces to the roll which oppose other forces which act on the roll during processing. In this way any tendency of the roll to bend and thereby produce sheet or strip of nonuniform shape is overcome.

3,596,490
ROLL STAND, WITH MEANS FOR THE FINE ADJUSTMENT OF THE ROLLS UNDER ROLLING PRESSURE
Horst Willeke, Dusseldorf, and Wilhelm Beckmann, Ratingen, both of, Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed Sept. 11, 1968, Ser. No. 759,047
Claims priority, application Germany, Sept. 13, 1967, P 16 02 176.4
Int. Cl. B21b 31/20, 31/32
U.S. Cl. 72—240 9 Claims



A roll stand, particularly for rolling sheets or strips, comprising coarse adjusting means for adjusting the rolls when unloaded, and hydraulic fine adjusting means for adjusting the rolls under rolling pressure, the fine adjusting means comprising an adjusting cylinder which bears upon a lower crosshead, and in which an adjusting plunger can be raised and lowered hydraulically, the free upper end of this adjusting plunger bearing against the under surfaces of the lower

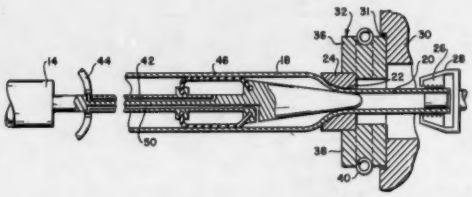
chocks, which are vertically movable in windows in the roll housing, the said adjusting cylinder forming the shifting plunger of a further hydraulic unit, between which and the lower crosshead is arranged a shifting cylinder accommodating the said shifting plunger, which bears with its free upper end against shoulders on the roll housing extending into the windows thereof.

3,596,491

METHOD FOR TAPERING TUBES

Hobart A. Cress, San Pedro, and John W. Hinshaw, Garden Grove, both of, Calif., assignors to The Battelle Development Corporation, Columbus, Ohio

Filed May 19, 1969, Ser. No. 825,481
Int. Cl. B21c *1/24*
U.S. Cl. 72—283 **21 Claims**



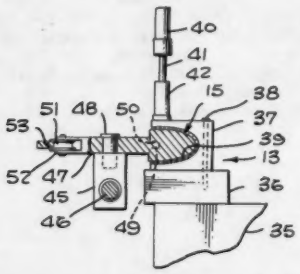
Tubular shapes are tapered by drawing through a deformable die over a tapered mandrel that is of a length that differs from that of the tapered product by causing relative movement between the mandrel and the tube and die.

3,596,492

METHOD FOR DRAW FORMING ELONGATED SHAPES

Wilford A. Swanson, 10730 Wheatland, Sunland, Calif.

Filed Nov. 4, 1968, Ser. No. 773,271
Int. Cl. B21d *11/02*
U.S. Cl. 72—297 **4 Claims**



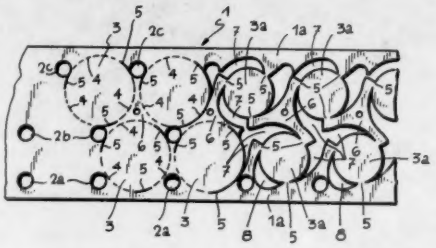
A preformed elongated workpiece which has a hollow interior and an open side is placed in a machine with both exterior sides of the workpiece restrained. An arcuate forming tool is made having a length much shorter than the workpiece as, for example, about one-tenth as long. One end of the forming tool is given an exterior size and shape the same as desired at one end of the finished workpiece and the other end of the forming tool is given a size and shape the same as that desired at the opposite end of the finished workpiece. The forming tool is pivotally mounted on a carriage so that the large end of the forming tool is pressed into what will become the large end of the finished shape. The forming tool is then moved progressively from one end to the other of the workpiece and progressively rotated during its movement at a rate such that as the forming tool moves bodily from one end to the other of the workpiece, it is rotated progressively less rapidly in order to have the small end of the tool just reach a point of engagement with the workpiece when the carriage travel reaches the opposite end, thereby to proportionately change the size of the finished shape at a ratio of 10 to 1 as compared to the change in size of the forming tool. Rotation is accomplished by employment of a cam track on the machine and a cam follower connected to the pivotally moving forming tool. The workpiece is stretched endwise while the forming is being performed.

3,596,493

STAMPING PROCESS FOR METAL OBJECTS

Maurice Lachaussee, 360, rue de l'Yser, Ans-Lez-Liege, Belgium, and Andre Maigret, 4, Avenue de la Grange, Saint Maur Des Fosses, France

Filed Aug. 26, 1968, Ser. No. 755,214
Claims priority, application Belgium, Sept. 15, 1967, 41,474
Int. Cl. B21d *28/00;* **B21c** *1/00*
U.S. Cl. 72—339 **4 Claims**



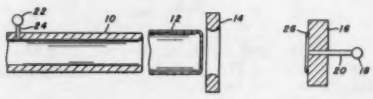
In a process for producing metallic objects by stamping blanks located side-by-side in echelon formation in a metal strip which is then advanced through shaping means for executing shaping operations there is provided blanks to be stamped by cutting said strip along portions of the true peripheries of the objects so that said blanks remain connected to spacer web portions of said strip solely by connecting elements maintaining said blanks within said strip during the subsequent shaping operations and until final separation of the finished objects.

3,596,494

VACUUM STRIPPING

John M. Hagan, Verona, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 23, 1968, Ser. No. 786,046
Int. Cl. B21d *45/00*
U.S. Cl. 72—344 **6 Claims**



Cup-shaped metal object is stripped from ram of hydraulic press using a stripper plate at end of stroke of the ram, the stripping being accomplished by applying a positive pressure inside the ram and cup-shaped object and a vacuum or substantial negative pressure outside the bottom of the object at the stripper plate.

3,596,495

HEAT TRANSFER DEVICE AND METHOD OF MAKING

Homer D. Huggins, Racine, Wis., assignor to Modine Manufacturing Company

Filed Apr. 1, 1969, Ser. No. 812,017
Int. Cl. B21d *53/06*
U.S. Cl. 72—367 **16 Claims**

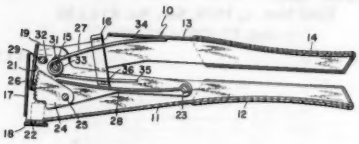
A heat transfer device and a method of making the same in which the device comprises a heat transfer tube having a longitudinal bore for flow of fluid therethrough, spaced heat

transfer internal fins within the tube and distortions in the wall of the tube adjacent the fins that not only distorts the wall but also deflects the fins in the region of the distortions to increase internal fluid turbulence and thereby promote better heat transfer.

3,596,496
RIVET SETTING TOOL

Gabriel M. La Pointe, Worcester, Mass., assignor to Parker Mfg. Company, Worcester, Mass.

Filed Feb. 14, 1969, Ser. No. 799,201
Int. Cl. B21d *9/05*
U.S. Cl. 72—391 **9 Claims**

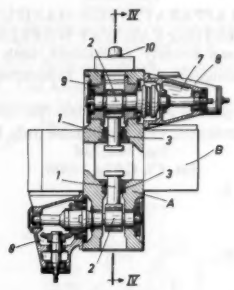


This disclosure has to do with a rivet setting tool and, more particularly, apparatus for setting separable mandrel rivets.

3,596,497
APPARATUS FOR THE CONTINUOUS SWAGING OF CONTINUOUS WORKPIECES

Bruno Kralowetz, St. Ulrich near Steyr, and Gottfried Blaimschein, Steyr, both of, Austria, assignors to GFM Gesellschaft Fur Fertigungstechnik Und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed June 4, 1969, Ser. No. 830,408
Claims priority, application Austria, June 25, 1968, 6061/68
Int. Cl. B21j *7/00*
U.S. Cl. 72—403 **8 Claims**

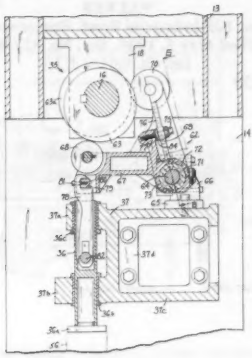


An apparatus for the continuous swaging of continuous workpieces in which at least two pair of swaging units are provided, each of which defines an aligned path of travel for the workpiece. The first unit of each swaging unit pair has two opposed dies set 90° to the opposed dies of the second unit of each pair. Only the dies of one of the units is fully extended at any given time. The dies of each unit perform a pivotal movement which has a component in the workpiece-feeding direction along the feed path when the dies are extended. The second pair of swaging units operate at a higher speed than the preceding pair of units, however, the arrangement is such that velocity of the component of movement in the workpiece-feeding direction is substantially the same in all units.

3,596,498
PRESS

Charles R. Bradlee, Cheshire, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Dec. 27, 1968, Ser. No. 787,493
Int. Cl. B21j *11/00*
U.S. Cl. 72—405 **12 Claims**

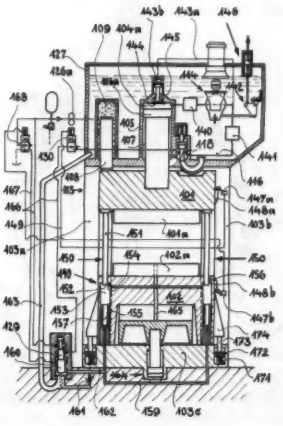


This disclosure relates to a press of the type provided with aligned plungers arranged to successively form a workpiece and having driving and restoring cams arranged to actuate the plungers through a crank mechanism having arms arranged in predetermined angular relationship and in engagement with the cams at all times.

3,596,499
MACHINE FOR PRESSURE FORMING AND IMPACT FORMING WORKPIECES

Horst M. Sauerbrey, Coburg, Germany, assignor to Langenstein & Schemann Aktiengesellschaft, Coburg, Germany

Filed Oct. 16, 1968, Ser. No. 768,042
Claims priority, application Austria, Oct. 16, 1967, A 9341/67
Int. Cl. B21j *9/10*
U.S. Cl. 72—407 **12 Claims**



A pressure-fluid-operated machine for forming a workpiece between two ram heads, at least one of which is reciprocatable relatively to the other, capable of operating alternatively as a press or as a counterblow hammer, by means of an hydraulic coupling with two coupling branches laterally engaging at least one of the rams incorporating a

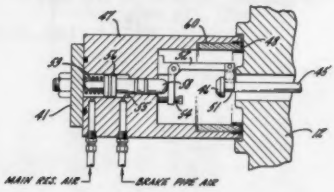
clapper valve, a reversed-run cylinder chamber and two impact (hammering) chambers bounded by pistons engaging the movable ram and arranged beside the press cylinder chamber, and other ancillary means.

3,596,500

APPARATUS FOR TESTING AIRBRAKE CONTROL VALVES

James G. Rees, 105 Industrial Road, Hammond, Ind.

Filed May 5, 1969, Ser. No. 821,801
Int. Cl. G01m *3/26*
U.S. Cl. 73—39 **8 Claims**



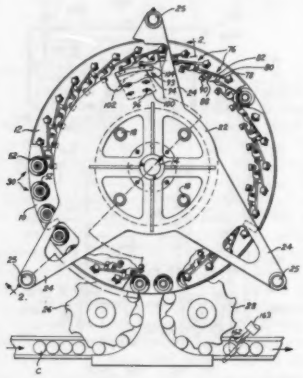
Apparatus is provided for testing airbrake valve portions. The apparatus features a fluid-operated brake clamp to confine the airbrake control valve portion by applying sealing pressure to the airbrake portion from a pivotable C-clamp which is free to move longitudinally with respect to the airbrake portion. In addition, the apparatus includes a device for confining and locating the airbrake control piston via a controlable piston stop contained within a sealed chamber. Several air control valves in the test apparatus are activated automatically, and substantially the entire test program is conducted on automatic control.

3,596,501

METHOD AND APPARATUS FOR DETERMINING VACUUM LEVEL IN SEALED CONTAINERS

Donald R. Forry, Columbus, Ohio; Charles A. Cummings, Columbus, Ohio; Robert Russell, Columbus, Ohio; Ben C. Peralta, Fort Wayne, Ind.; Albert M. Schaffer, Cedar Rapids, Iowa; Dale A. Denny, Columbus, Ohio, and William H. Welch, Columbus, Ohio, assignors to Abbott Laboratories

Filed Aug. 6, 1969, Ser. No. 847,996
Int. Cl. G01m *3/00*
U.S. Cl. 73—52 **17 Claims**



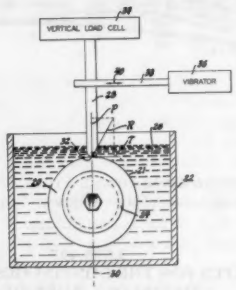
A method and apparatus for testing the vacuum level in sealed containers includes a support for the container having an accelerometer attached thereto. The container and support is accelerated by an impacting hammer to cause hydrodynamic oscillations of the contents in the container which in turn are transmitted to and sensed by the accelerometer. If the vacuum level in the container is insufficient, the oscillations are damped and if the vacuum level is sufficient the container contents freely oscillate to produce vibrating oscillations in the container support. The accelerometer produces signals having characteristics correlated to the vibrating oscillations and the containers are accepted or rejected in response to the accelerometer signals.

3,596,502

ULTRASONIC FATIGUE TESTING

Willard W. Bayre, Amherst, and John A. Erickson, Port Clinton, both of, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1969, Ser. No. 874,625
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.3 **4 Claims**



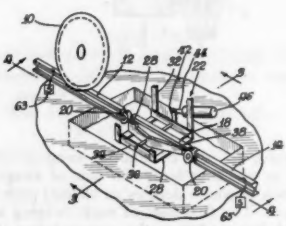
A method of duplicating the stress cycling experienced by a bearing race in which a probe is loaded radially into the raceway and ultrasonically vibrated in a tangential direction is disclosed.

3,596,503

METHOD AND APPARATUS FOR MANIPULATING AND TESTING RAILWAY WHEELS

Alden V. Gay, and Beverly J. Balbinot, both of Prairie Village, Kans., assignors to Amsted Industries Incorporated, Chicago, Ill.

Continuation-in-part of application Ser. No. 504,342, Oct. 24, 1965, now abandoned. This application July 15, 1968, Ser. No. 744,724
Int. Cl. G01n *24/00*
U.S. Cl. 73—67.8 **15 Claims**

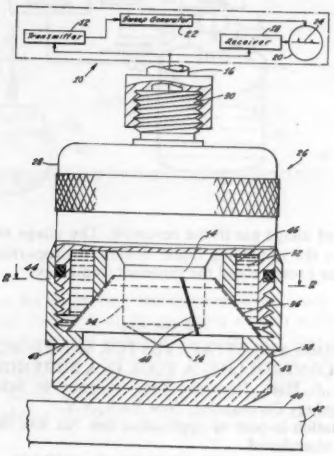


An apparatus is provided for moving railway wheels into and out of a testing station where they are lowered into a tank containing water and rotated in an upright position. During rotation, ultrasonic devices located within the tank test the wheel for internal defects and warpage. The wheel is then ejected from the testing station.

3,596,504
ULTRASONIC SEARCH UNIT

Albert E. Frey, Danbury, Conn., assignor to Automation Industries Inc., Century City, Calif.

Filed Jan. 10, 1969, Ser. No. 790,309
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 13 Claims

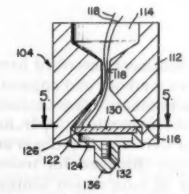


A nondestructive ultrasonic test system which includes a search unit with a crystal transducer which is cylindrical in shape end radiates beams of ultrasonic energy normal to the cylindrical axis of the crystal. A conically shaped reflector surrounds the cylindrical crystal transducer and reflects the beams therefrom into the workpiece. The reflector is deformable for change of the included angle of the conical shape to focus the beam.

3,596,505
ULTRASONIC SEARCH UNIT WITH RADIAL MODE MOTION TRANSDUCER

Milton F. Zeutschel, Bellevue, Wash., assignor to Automation Industries Inc., Los Angeles, Calif.

Filed June 24, 1969, Ser. No. 836,002
Int. Cl. G01n *24/04*
U.S. Cl. 73—71.5 11 Claims

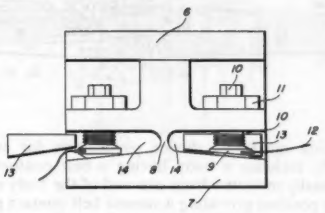


An ultrasonic search unit and a nondestructive material tester are described. The search unit comprises a housing generally formed of a relatively dense material, one end of which is hollow. An insert is securely connected over the hollow end. The insert has a relatively thick outer portion and a relatively thinner diaphragm portion. A transducer crystal is secured to the thick outer portion of the insert and is capable of being vibrated in the radial mode when excited with electrical energy. A contactor is secured to the diaphragm and adapted to be coupled to the workpiece under test.

3,596,506
TOOL FORCE MONITOR

Andy R. Wilson, Jr., Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 25, 1969, Ser. No. 810,282
Int. Cl. G01l *5/00*
U.S. Cl. 73—133 2 Claims

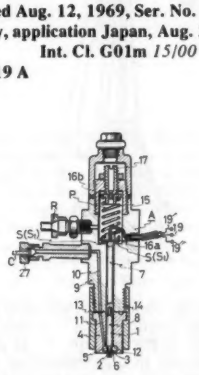


A device for use during single point tool turning operations on lathes to monitor and limit tool force with additional utility as an adaptive control sensing mechanism. Four compressible load cells produce electrical signals proportional to the force exerted upon them. The load cells are located and entrapped between two parallel plates that are connected by a pivot or flexure joint and the entire device is positioned between the tool and tool bar.

3,596,507
APPARATUS FOR DETECTING THE INJECTION TIMING OF AN INTERNAL COMBUSTION ENGINE

Yujiro Oshima, Ichinomiya-shi; Nobuyuki Mori, Nagoya-shi, and Kizo Hayakawa, Aichi-ken, all of, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Aug. 12, 1969, Ser. No. 849,325
Claims priority, application Japan, Aug. 20, 1968, 43/59737
Int. Cl. G01m *15/00*
U.S. Cl. 73—119 A 6 Claims



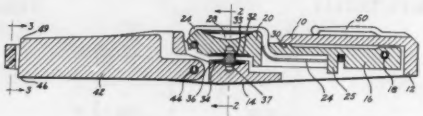
Apparatus for detecting the injection timing of an internal combustion engine, wherein the strain dislocation, or stress change of the injector spring, due to the lift of the needle valve of the injector when fuel is sprayed out of the injector to the ends of the cylinder, is converted to an electrical signal, said signal being used to trigger a stroboscopic lamp so as to flash synchronously with the lift of the needle valve of the injector, the stroboscopic lamp being positioned to illuminate a crank angle scale rotating with the engine crankshaft and a fixed index on the engine block, permitting observation of the crank angle, as if the engine were in static state.

3,596,508

BELT TENSION MENSURATION DEVICE

Graham W. Howard, 5996 S. Crocker St., Littleton, Colo.

Filed Dec. 4, 1969, Ser. No. 882,166
Int. Cl. G01l *5/06*
U.S. Cl. 73—144 11 Claims



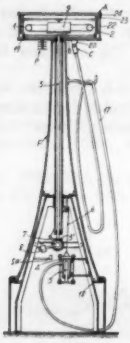
A tension measuring device particularly for automotive drive belts includes a body having a belt contact point, a lever pivotally mounted from one end of the body extends to a holding position providing a second belt contact point, and a second lever pivotally mounted from about the holding position extends to the opposite end thereof forming a third contact belt point. A predetermined pressure indicating means associated with the first lever indicates when a predetermined pressure is applied to the unit by the user while the unit is seated on a belt, and movement of the second lever on a scale indicates tension on the belt.

3,596,509

APPARATUS FOR MEASURING TIRE PRESSURES

Giulio Raffaelli, via del Duomo 12, Lucca, Italy

Continuation-in-part of application Ser. No. 624,805, Mar. 21, 1967. This application Aug. 18, 1969, Ser. No. 850,992
Claims priority, applications Italy, Mar. 26, 1966, June 3, 1966, Jan. 19, 1967 and Aug. 20, 1968, 16027/66, 18647/66, 32902/67, 32911/68
Int. Cl. B60c *23/02*
U.S. Cl. 73—146.3 6 Claims



A pressure gauge for communication with the air in a tire including a graduated circular scale rotatable with respect to a pointer in response to the pressure in the tire. The pointer is operatively connected to a galvanometer controlled by a circuit having two thermistors responsive to the temperatures of the air in the tire and the ambient air respectively.

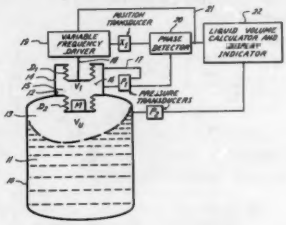
3,596,510

RESONANT INFRASONIC GAUGING APPARATUS

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Bernard Siegel, 4200 Artesia, Torrance, Calif., and Seymour Lieberman, 3826 Hauser, Los Angeles, Calif.

Filed Feb. 4, 1970, Ser. No. 8,497
Int. Cl. G01f *23/28*
U.S. Cl. 73—149 6 Claims

An apparatus for determining the quantity of liquid in a closed reservoir containing a liquid and an ullage gas. An enclosed gas filled cavity communicates with the reservoir through a common elastomeric diaphragm surface. Infrasonic pressure signals directed into the cavity from a variable frequency driving means cause the ullage gas and the diaphragm to resonate at a frequency proportional to the volume of ullage gas in the reservoir. The ullage volume and therefore the remaining liquid volume is proportional to the ullage gas pressure and the resonant frequency.



3,596,511

METHODS AND APPARATUS FOR MONITORING AND CONTROLLING A TOOL IN A BOREHOLE

Herbert J. Hart, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

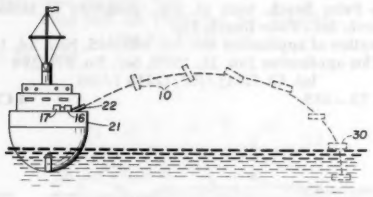
Continuation-in-part of application Ser. No. 802,708, Dec. 31, 1968, abandoned
Filed July 15, 1969, Ser. No. 857,252
Int. Cl. E21b *49/06*
U.S. Cl. 73—153 30 Claims

The particular embodiment described herein as illustrative of the invention shows methods and apparatus for use with a core slicing tool in a borehole. Various circuits for monitoring and controlling the core slicing operation are disclosed, as well as circuits for deriving directional and depth control information. Means are disclosed for transmitting information from a plurality of information sources in the tool on one conductor pair. Also, automatic bias control means at the surface of the earth are shown for accurately detecting the transmitted information. Power can be selectively applied to either the core slicing circuits or the directional and depth circuits on the same conductor set by providing two different power modes. Means in the tool are responsive to one or the other power mode to switch various circuits in the tool onto various cable conductors. Also, a plurality of core slicing operations are controlled from the surface of the earth on one conductor pair by utilizing switching means responsive to a plurality of current logic states. Additionally, a method of determining the overload operating point of a motor in a tool in a borehole is disclosed.

3,596,512
EXPENDABLE AIR PROBE

Richard W. Bixby, Little Compton, R.I., assignor to The Sippican Corporation, Marion, Mass.

Filed Jan. 5, 1970, Ser. No. 641
Int. Cl. G01d 1/00
U.S. Cl. 73—170 A 5 Claims

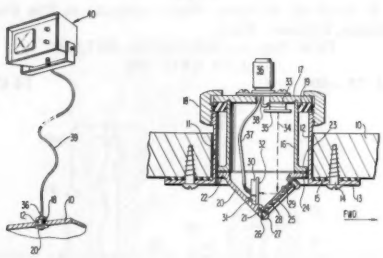


A device for measuring the characteristics, such as temperature and humidity, of the air above a water surface comprises a probe which is launched in a trajectory over the body of water. The probe is connected to a measuring station by a conducting wire. The measuring probe is designed to have a low speed during descent, and may be in the form of a rotor, or be provided with a drag device such as a parachute to slow its descent.

3,596,513
SPEEDOMETER FOR BOATS

Gary O. Sandstedt, Kansas City, Mo., assignor to Roger H. Finch, Silver Spring, Md.

Filed Jan. 27, 1970, Ser. No. 6,237
Int. Cl. G01c 21/00
U.S. Cl. 73—181 14 Claims



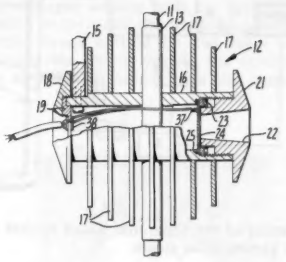
A boat speedometer embodies a radiant energy source and a receiver means which is responsive to radiant energy and produces an output. A speed indicator means is coupled to the receiver means. Another means responsive to water pressure caused by movement of the boat in the water produces changes in the response effect of the receiver means in accordance with speed variations of the boat.

3,596,514
POWER METER FOR MEASUREMENT OF RADIATION

Wayne S. Mefferd, Palo Alto; Robert J. Rorden, Los Altos, and James L. Hobart, Palo Alto, all of, Calif., assignors to Coherent Radiation Laboratories, Inc., Palo Alto, Calif.

Filed Jan. 2, 1968, Ser. No. 695,160
Int. Cl. G01k 17/00
U.S. Cl. 73—190 6 Claims

A power meter for measuring radiation including a radiation target disc, a heat sink for cooling the periphery of the disc, and a circumferentially extending array of radial thermocouples for measuring the total power of energy incident

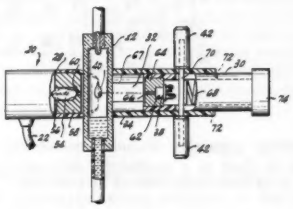


on the central area of the disc as a function of the sum of radial temperature gradients of the disc.

3,596,515
DROP FLOW SENSOR AND RESILIENT CLAMP THEREFOR

Richard A. Cramer, La Jolla, Calif., assignor to Ivac Corporation, La Jolla, Calif.

Filed Nov. 27, 1967, Ser. No. 685,928
Int. Cl. G01p 5/00
U.S. Cl. 73—194 R 10 Claims



Apparatus for monitoring drop flow in the drip chamber of an intravenous set and including a sensor housing containing a reference light source located a fixed distance from a photocell to define a fixed optical sensing gap therebetween, with a reference light beam normally impinging upon the photocell. The housing can be selectively clamped upon the drip chamber with the drip chamber positioned within the sensing gap to intercept the reference beam. A falling drop of fluid within the drip chamber interrupts the reference beam, and the variation in the electrical response of the photocell is communicated to an indicator to indicate the presence of a drop. A spring-biased sleeve clamps the housing onto any size drip chamber without altering the size of the sensing gap. The clamping sleeve is provided with rods which extend radially outward from opposite sides of the sleeve and, in conjunction with one end of the housing, define a syringe-type grip for positioning the sleeve.

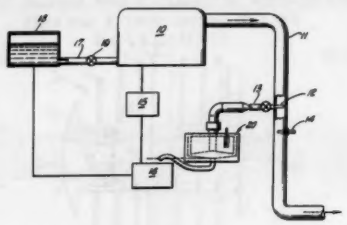
3,596,516
METHOD AND APPARATUS FOR MEASURING STEAM PROPERTIES

Stewart Haynes, Jr., and Fuad T. Saadeh, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 686,931, Nov. 30, 1967
Filed Mar. 27, 1969, Ser. No. 839,102
Int. Cl. G01k 17/00
U.S. Cl. 73—190 R 10 Claims

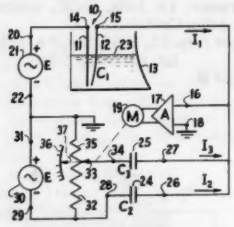
A method of and apparatus for determining the properties of steam by measuring the temperature thereof, adiabatically

expanding a sample of the steam, separating the liquid from the expanded sample of steam, and comparing the chloride



ion concentration of the separated liquid to that of the feed water used to generate the steam.

3,596,517
CAPACITANCE-TYPE FLUID MEASURING APPARATUS
Frederick L. Ryder, 50 Harrison Ave., Lynbrook, N.Y.
Filed Mar. 10, 1969, Ser. No. 805,455
Int. Cl. G01f *23/26*
U.S. Cl. 73—304 **4 Claims**

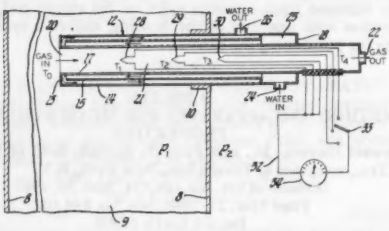


Measuring apparatus includes measuring condenser immersible in fluid in a container, dielectric constant K and density D of fluid being related by equation:

$$(K-1)/D = A + B(K-1).$$

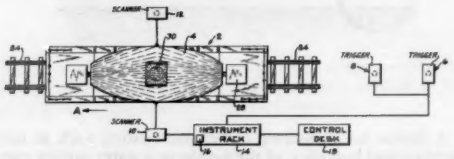
Electrodes of condenser are spaced and shaped so that dry capacitance of portion of condenser which will be wetted by fluid volume V is a function *g* of V. Function *G* is selected so that when multiplied by function of *D* resulting from solution of above equation for *K*−1, a function results dependent upon value of DV alone, regardless of separate values *D* and *V*.

3,596,518
GAS TEMPERATURE MEASUREMENT
John W. Kirkpatrick, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed June 17, 1968, Ser. No. 737,457
Int. Cl. G01k *7/02, 13/02*
U.S. Cl. 73—341 **10 Claims**



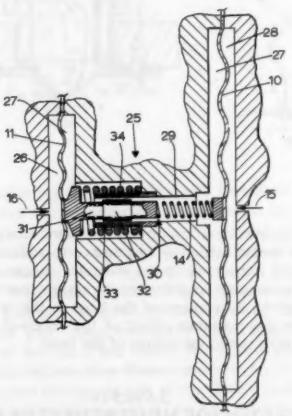
A device for measuring the temperature of very hot gas comprises a tube which has a double wall through which cooling water is circulated. Gas flows through the tube at a predetermined rate past two temperature measuring thermocouples in the duct. By reading the temperature at the two thermocouples, the temperature of the gas entering the tube may be determined.

3,596,519
HOT SPOT DETECTOR SYSTEM
Fred Blonder, West Palm Beach, and Theodore H. Elworth, North Palm Beach, both of, Fla., assignors to Molecular Research, Inc., Palm Beach, Fla.
Continuation of application Ser. No. 685,465, Nov. 24, 1967.
This application Jan. 21, 1970, Ser. No. 870,299
Int. Cl. G01j *5/02;* **G01k** *13/06*
U.S. Cl. 73—355 **4 Claims**



A spot detecting system for automatically measuring and recording said temperature levels of the surface of a container to anticipate breakthroughs in the lining of the container in order to properly schedule lining maintenance. The spot detecting system includes a triggering means for actuating the system, thermal radiation sensors for detecting the temperature levels of various areas of the outer surface of the container, recording means connected to the sensors for printing a temperature level profile of the container, and an alarm means connected to the system for indicating possible breakthroughs in the container.

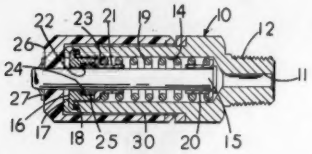
3,596,520
SPRING COMPENSATED DIFFERENTIAL PRESSURE CELL
Philip H. Sanford, Walpole, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Filed Aug. 4, 1969, Ser. No. 847,080
Int. Cl. G01l *7/08*
U.S. Cl. 73—407 **14 Claims**



A differential fluid pressure capsule. The capsule has a chamber with diaphragms as opposite walls. The diaphragms have different effective areas, one large, one small. A spring connection joins the diaphragms. The chamber is filled with substantially incompressible liquid. An application is in temperature compensation. Temperature change results in fill liquid volume change and consequent relieving movement of

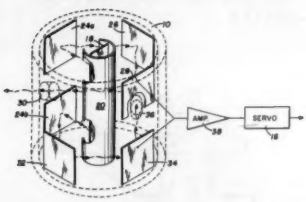
the large diaphragm, while the small diaphragm remains without movement. External differential pressure change moves both diaphragms and signal output is from movement of the small diaphragm. Application examples are motion systems and force balance systems.

3,596,521
LUBRICATING MEANS FOR PRESSURE INDICATOR
Billy Lynn Guy, Lexington, Ky., assignor to Unibraze Corporation, New Rochelle, N.Y.
Filed Nov. 18, 1968, Ser. No. 776,685
Int. Cl. G01i 7/16
U.S. Cl. 73—419 **1 Claim**



A pressure indicator includes a body having movable means therein with which sealing means cooperates to determine the area of the movable means responsive to fluid introduced into the body. Lubricating means is disposed adjacent the sealing means and lubricates both the sealing means and a movable surface with which the sealing means cooperates.

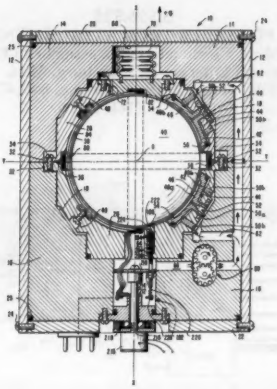
3,596,522
SECOND SOUND MEASUREMENT OF ABSOLUTE ROTATIONAL MOTION
Donald L. Ensley, San Leandro, Calif., assignor to Harvest Queen Mill & Elevator Co., Dallas, Tex.
Filed Apr. 5, 1968, Ser. No. 719,133
Int. Cl. G01p 3/00
U.S. Cl. 73—505 **16 Claims**



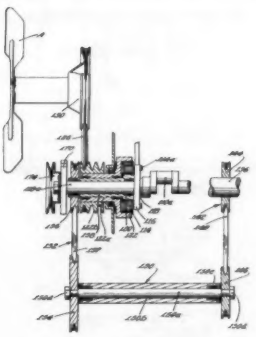
A method and apparatus for measuring absolute rotational motion by producing entropy waves in liquid helium II filling a cylindrical container rotationally mounted with respect to a fixed reference. A carbon resistance heater generates an entropy wave beam to a beam splitter where it is divided into two beams progressing oppositely through the liquid helium II at a speed independent of the angular velocity of the container. Reflectors attached to the container reflect the two oppositely directed beams to a detector station where the sense and magnitude of any phase difference between the beams actuates a phase detector. The phase detector produces a signal proportional to the sense and magnitude of the phase difference to a servo loop coupled to adjust the rotational motion of the container.

3,596,523
FULL-FREEDOM GIMBALLESS GYROSCOPE SYSTEM
Richard B. Clark, Granada Hills, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.
Filed Dec. 4, 1967, Ser. No. 687,563
Int. Cl. G01c 19/28
U.S. Cl. 74—5.6 **30 Claims**

A gyroscope system having a gyro rotor completely enclosed within a spherical float that is supported within a hollow spherical cavity by a flotation fluid and a spherical arrangement of hydrostatic bearing pads. The gyroscope rotor is mounted on a spin axle by a duplex bearing arrangement to be spun by a motor also within the float. A set of orthogonally arranges sensing coils are mounted within the spherical cavity to surround the float. Flux emanating from magnetic pole pieces carried on the rotor cut the coil windings to generate output signals, the relative amplitude and phasing of which is indicative of the angular displacement of the rotor spin axis from each of the coil axes. A caging mechanism maintains the float in an initial position and may be used to supply power from an external source to accelerate the spin motor. After uncaging, spin motor power is supplied either from batteries carried within the float or from an external source which supplies power through a capacitive or conductive coupling between the conductive surface of the hydrostatic bearing pads and adjacent circular conductive segments at either end of the float.



3,596,524
ENGINE ACCESSORY DRIVE SYSTEM
Harvey A. Cook, Cleveland, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Jan. 20, 1970, Ser. No. 4,321
Int. Cl. F16h 37/00; F01p 7/02
U.S. Cl. 74—15.4 **8 Claims**



Efficient operation of vehicle power source or engine accessories over a smaller and more compatible speed range i.e., at a higher speed than the speed of the power source when the power source is at low speed and a lower speed than the power source when the power source is at high speed, is made possible by an accessory drive system which includes the power source interconnected between a first gear means and a second gear means wherein the second

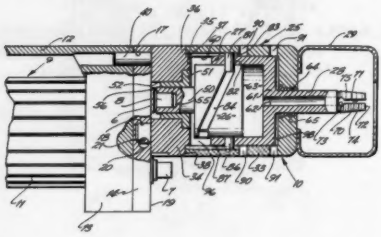
gear means serves to rotate a drive shaft at a speed which will usually be different from the power source and wherein the first or planetary gear means includes first, second and third elements with the power source being directly connected to the first or planet carrier element, the second drive shaft being connected to the second or sun gear element by means of a power transmitting assembly and the accessory power takeoff means cooperating with the third or ring gear element.

3,596,525

PORTABLE TOOL ATTACHMENT

George M. Niesz, Cincinnati, Ohio, assignor to F. L. Cappaert d/b/a Cappaert Enterprises, Vicksburg, Miss.

Filed Aug. 12, 1969, Ser. No. 849,479
Int. Cl. F16h *25/16*
U.S. Cl. 74—57 6 Claims



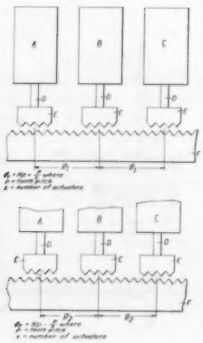
A rotary to linear tool attachment adapted to be secured to an underwater power tool so as to enable a rotary output shaft of the tool to drive a reciprocating output shaft of the adapter. Specifically, the adapter enables the rotary output shaft of a power tool to drive rotary saws, chippers, descalers or hammers for underwater applications.

3,596,526

MEANS FOR PRODUCING RELATIVE MOVEMENT BETWEEN TWO BODIES

Maurice Woolmer Gribble, 18, Ley Hey Road, Marple, Cheshire, England

Filed Jan. 7, 1969, Ser. No. 789,459
Claims priority, application Great Britain, Jan. 13, 1968, 2028/68
Int. Cl. F16h *21/44*
U.S. Cl. 74—110 5 Claims



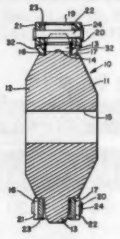
Means for moving one body relative to another comprises a main toothed rack carried on one body and at least three actuators carried on the other body. Each actuator carries a stub rack of similar form to the main rack and is operable to force the stub rack into engagement with the main rack. The spacing between the actuators causes the bodies to move relative to one another in the required direction.

3,596,527

CHAIN AND SPROCKET ASSEMBLY

Alfred Den Besten, Fulton, Ill., assignor to Joseph T. Chester and Richard A. Kummerer, Fulton, Ill., part interest to each

Filed May 28, 1969, Ser. No. 828,591
Int. Cl. F16h *7/06*, *55/30*; F16g *13/02*;
U.S. Cl. 74—229 5 Claims



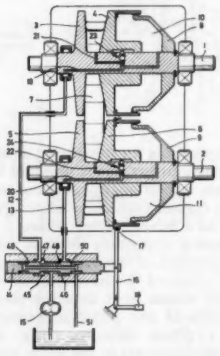
A chain and sprocket drive in which the chain is composed of a plurality of joined U-shaped links and the sprocket has annular shoulders on opposite sides of its teeth on which the sides of the links may ride so as to retain the bight portion of the links out of contact with the base portions of the teeth.

3,596,528

INFINITELY VARIABLE CONE PULLEY TRANSMISSION

Otto Dittrich, and Herbert Kirchner, bad Homburg Vor Der Hohe, Germany, assignors to Reimers Getriebe A. G., Zug, Switzerland

Filed Dec. 22, 1969, Ser. No. 887,048
Claims priority, application Germany, Dec. 24, 1968, P 18 16 949.8
Int. Cl. F16h *55/22*; B60k *21/10*
U.S. Cl. 74—230.17 F 14 Claims

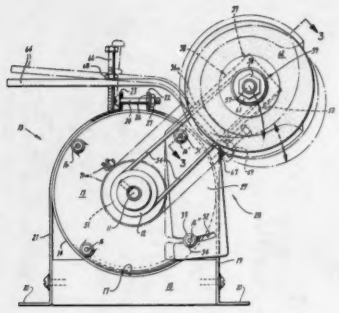


A fully hydraulic control mechanism for an infinitely variable cone pulley transmission in which the axially movable conical disc of each pulley is pressed against an endless belt or chain running between the pulleys with a different contact pressure than the corresponding disc of the other pulley. The control mechanism acts at the same time upon the axially movable discs on the driving and driven shafts of the transmission, and the contact pressure of all discs is load-responsive as well as speed-ratio progressive.

3,596,529
QUICK CHANGE MOTOR-MOUNTED ARBOR MOUNTING ASSEMBLY AND REPLACEABLE UNIT THEREFOR

Homer G. Allen, 2726 Haste St., Berkeley, Calif.

Filed Feb. 2, 1970, Ser. No. 7,509
Int. Cl. F16h 7/10; B24b 7/00
U.S. Cl. 74—242.15 R 9 Claims

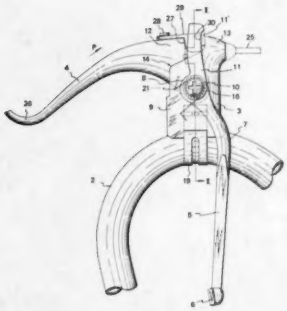


A readily releasable means for holding and operating an arbor construction of a type carrying a pulley and tool to be cyclically driven from an electric motor assembly includes a mounting base providing a seat to receive the motor. The motor can be rotatably positioned relative to the seat for proper positioning of the tool. The arbor rests in a readily releasable bearing block while means are provided to align the sheaves of the arbor pulley and a drive pulley mounted on the motor shaft so that the two sheaves lie in the same plane.

3,596,530
BRAKE OPERATING DEVICE

Kiyokazu Yoshigai, 9-15 Wakaeminami-machi 1-chrome, Higashiosaka-shi, Osaka-Ku, Japan

Filed July 8, 1969, Ser. No. 839,861
Claims priority, application Japan, Aug. 10, 1968, 43/68679
Int. Cl. G05g 1/00
U.S. Cl. 74—480 R 3 Claims

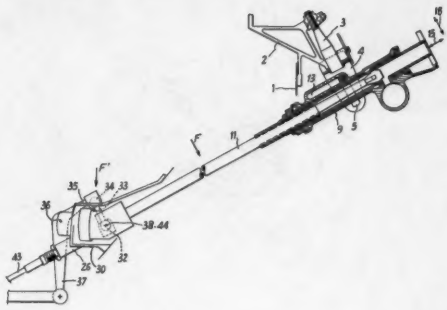


A drop-type bicycle handle is provided with hand operating brake means having a conventional brake lever member pivoted to a bracket secured upon the handle. Said lever member has a stepped portion formed at a portion thereof which abuts against the bracket and an engaging member is pivotably secured to the lever member for releasable engagement with the stepped portion. Upon release of this engaging member from the stepped portion, the lever member is rotated further so as to further release the release wire.

3,596,531
TELESCOPIC STEERING COLUMN GEAR-CHANGE MECHANISM

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Sept. 23, 1969, Ser. No. 860,358
Claims priority, application France, Oct. 8, 1968, 3564
Int. Cl. G05g 13/04
U.S. Cl. 74—484 5 Claims

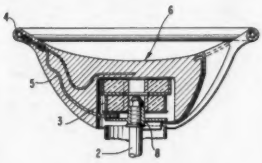


A steering column gear-change linkage is capable of accommodating adjustments in two perpendicular directions of a steering column which is telescopic. A support arrangement movable with respect to a fixed support, such as an automobile scuttle incorporates slides having slots extending in said two perpendicular directions. Movement in a vertical plane about a pivot axis is accommodated at a position remote from the steering column head by a slide cooperating with splines on a control tube, angular movement about the longitudinal axis of which is effected by a control lever. The slide is rigid with a lever connected by a linkage with the gearbox. Movement of the control lever axially of the control tube serves to control the gearbox selector rods through a rod coaxial with the control tube and a bowden cable.

3,596,532
SAFETY STEERING WHEEL FOR MOTOR VEHICLES

Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Apr. 18, 1969, Ser. No. 817,326
Claims priority, application Germany, Apr. 18, 1968, P 17 55 247.5
Int. Cl. B62d 1/04
U.S. Cl. 74—552 4 Claims



A safety steering wheel for motor vehicles in which the steering wheel rim, the steering wheel spokes and the hub as well as the deformation member are surrounded with a relatively soft elastic synthetic resinous material and in which a large impact surface is provided on the inside of the steering wheel rim which preferably does not extend significantly below the plane of the steering wheel rim; the steering wheel spokes are elastic and may be made, for example, of band steel.

3,596,533

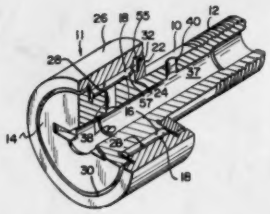
LUBRICATING WASHERS FOR REDUCING FRICTION BETWEEN MOVING PARTS IN A CAM FOLLOWER

George C. Nightingale, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Continuation-in-part of application Ser. No. 675,473, Oct. 16, 1967, now abandoned. This application Aug. 27, 1969, Ser. No. 857,284

Int. Cl. F16h 53/08

U.S. Cl. 74—569 7 Claims



An annular nylon washer is inserted between mutual surfaces formed by the integral end flange of the stud of a cam follower-type bearing and the face of a counter bore in the axial end of the outer racering in which it is fitted. A similar washer is inserted between the mutual surfaces formed by the annular end plate and the face of the counterbore in which it is mounted. The ring is self-lubricating and acts to reduce the sliding friction between these surfaces to prolong the life of the bearing.

3,596,534

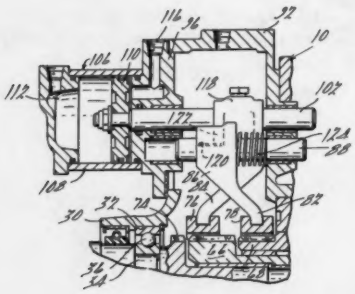
POWER TRANSFER GEAR CASE

John S. Logan, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 28, 1969, Ser. No. 819,590

Int. Cl. F16h 37/06; F16d 21/02

U.S. Cl. 74—655 T 1 Claim



Torque transfer gearing for distributing driving torque from the power shaft of a main power transmission mechanism for a wheeled vehicle to each of two axle shafts, said gearing comprising a shiftable coupling for establishing and disestablishing a driving connection between a driven gear and each of the two drive shafts for the vehicle, said coupling comprising a clutch sleeve for drivably connecting the driven gear to the separate drive shafts regardless of the presence of driving torque on one of the drive shafts.

3,596,535

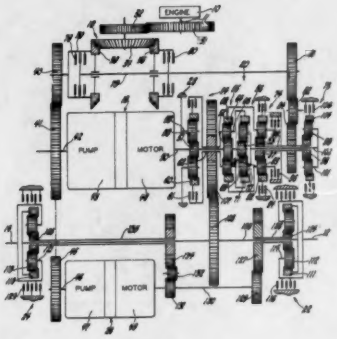
TRANSMISSION PROVIDING HYDROSTATIC DRIVE AND HYDROMECHANICAL DRIVE

James C. Polak, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1969, Ser. No. 855,147

Int. Cl. F16h 37/06, 47/04

U.S. Cl. 74—720.5 8 Claims



A transmission having a hydrostatic propulsion drive unit combined with planetary gearing to provide in both forward and reverse a full hydrostatic drive in a low speed range and three hydromechanical drives in successively higher speed ranges with synchronous drive establishing device shifting, the transmission with dual output also having a separate hydrostatic steer drive unit combined with the gearing to provide steering.

3,596,536

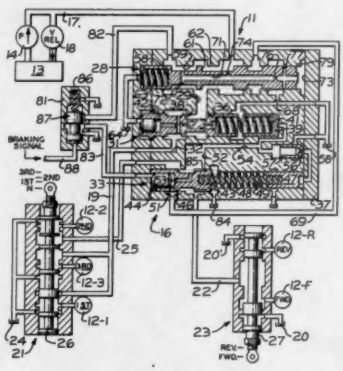
TRANSMISSION SHIFT CONTROL WITH CONDITIONAL AUTOMATIC NEUTRALIZING MEANS

James G. Starling, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 24, 1969, Ser. No. 869,020

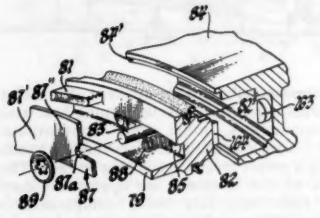
Int. Cl. F16h 57/10; F16d 13/00

U.S. Cl. 74—753 6 Claims



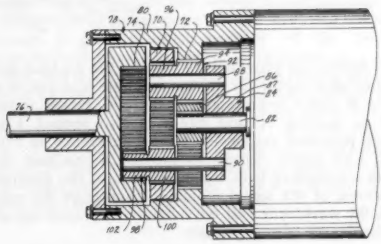
A compact simplified safety valve functions to inactivate fluid operated drive conditioning clutches of a vehicle transmission if the operating fluid pressure has remained below a particular level for a predetermined time and the control lever is not at the neutral position. This prevents the transmitting of drive through the transmission if the vehicle engine should be started up while the transmission controls are at a setting other than neutral.

3,596,537
CLUTCH PISTON AND RETRACTION SPRING SUBASSEMBLY AND METHOD OF TRANSMISSION ASSEMBLY
Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 11, 1969, Ser. No. 832,168
Int. Cl. F16h *15/56*; F16d *55/10, 25/06*
U.S. Cl. 74—759 16 Claims



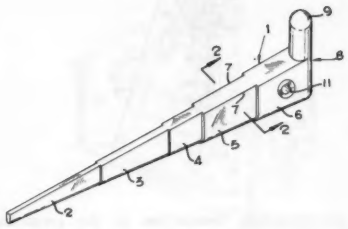
This transmission has multiratio drive planetary gearing and a plurality of fluid actuators for selectively engaging a plurality of friction devices to engage the ratio drives. A central web splined to the transmission housing has oppositely facing fluid actuators each having an annular piston in a cylinder. Each piston has an inner annular engagement seat and an outer interrupted annular engagement seat for engaging the brake plates with retraction springs and fastener posts located between the seats. A retainer plate has an annular portion between the seats engaging the springs, an aperture for receiving the fastener posts and ear portions extending into engagement with the web. Snap rings hold the retainer plates and web against axial movement. A fastener on each fastener post holds the retainer plate, piston and springs in assembled position for assembly into the cylinder of the transmission.

3,596,538
SPEED CHANGING DEVICE
Arthur R. Braun, 508 N. Cary-Algonquin Road, Cary, Ill.
Filed Dec. 5, 1968, Ser. No. 781,510
Int. Cl. F16h *1/28*
U.S. Cl. 74—801 5 Claims



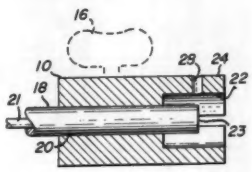
A speed changing device comprising a stationary female ring gear, a rotating female ring gear having a different pitch diameter and in axial alignment with the stationary ring gear, and a drive gear system which rides about the stationary ring gear while simultaneously engaging and rotating the rotating ring gear. Speed reduction or amplification is accomplished by the difference in pitch diameters and resultant number of teeth of the ring gears and, in one embodiment, speed reduction is further accomplished by a planetary drive gear system.

3,596,539
TAPERED DRIFT PINS AND METHODS OF MAKING AND USING THE SAME
Russell L. Gollaher, 604 Baden Avenue, St. Louis, Mo.
Filed June 9, 1969, Ser. No. 831,356
Int. Cl. B25b *27/00*
U.S. Cl. 81—3 1 Claim



A tapered drift pin comprising an elongated member provided with a plurality of tapered sections for use with various sized machines.

3,596,540
END DRESSING APPARATUS FOR SEMI-RIGID COAXIAL CABLES
Donald F. Hooper, Ben Lomond, Calif., assignor to Itek Corporation
Filed Dec. 20, 1968, Ser. No. 785,700
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 10 Claims

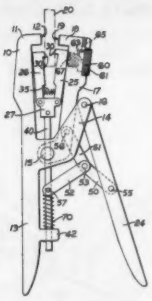


An end dressing apparatus for preparing the ends of small diameter semirigid coaxial cable for receiving a precision end fitting. The apparatus includes a cable clamping and cutting tool alignment means and a pair of cutting tools for removing a portion of the outer conductor and insulator from the end of a coaxial cable and shaping the exposed end of the inner conductor thereof.

3,596,541
WIRE STRIPPING TOOLS
Zdzislaw Bieganski, c/o Apem Works, St. Albans Road, Watford, Hertfordshire, England
Filed Oct. 31, 1968, Ser. No. 772,101
Claims priority, application Great Britain, Nov. 4, 1967, 50228/67
Int. Cl. H02g *1/12*; B23p *19/04*; B26b *17/02*
U.S. Cl. 81—9.5 A 3 Claims

The invention provides a wire stripping tool having cutting blades for part-severing the sheath which is to be stripped

from the wire, each blade being fabricated of a set of laminations in face-to-face contact so that the laminations can col-



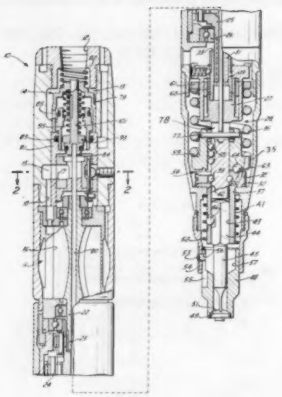
lectively accommodate themselves to the cross-sectional shape of the cable to achieve a better cut.

3,596,542

PNEUMATIC PUSH-START, TORQUE SHUT-OFF SCREW DRIVER

William K. Wallace, Barneveld, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed May 1, 1969, Ser. No. 820,749
Int. Cl. B25b
U.S. Cl. 81—52.4 **9 Claims**



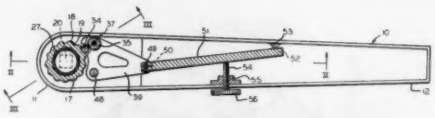
A pneumatic screw driver, the operation of which is automatically started when it is pressed against the work and automatically interrupted when the work has been driven to a predetermined degree of tightness, and the mechanism of which is automatically restored to normal condition when the tool is removed from the work. A clutch assembly which is slidable relative to the tool housing when the tool is pressed against the work, actuates a control valve mechanism by push rod means to cause live air flow to start operation of the tool. During the time the tool is pressed against the work, a torque releasable overriding cam clutch is adapted, upon delivery of a predetermined maximum torque to the work, to disengage and cause the push rod means to actuate the control valve mechanism to interrupt operating air flow to the motor. Whenever the tool is removed from the work, the clutch assembly and valve mechanism automatically return to normal condition. The invention is adapted to be incorporated in a linear type housing as well as in a piston grip type housing.

3,596,543

PRE-SET TORQUE MEASURING DEVICE OF THE BEAM TYPE

Talmage O. Green, Schaumburg, Ill., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Filed Sept. 8, 1969, Ser. No. 855,819
Int. Cl. B25b
U.S. Cl. 81—52.4 **10 Claims**



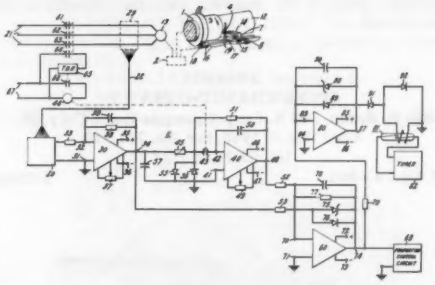
This disclosure embodies the concept of utilizing mechanical expedients comprising torque turning load resisting flexure instrumentalities, other than conventional springs, between the work engaging member and the handle member constituting a preset torque measuring wrench. The work engaging and handle members are operatively connected by combined roller and flex beam components which are calibrated to offer a predetermined turning load resistance to roller slip lever engagement measured by the flex beam roller carrier in confronting relation to a work engaging fluted revoluble member and the turning handle member. The beam flex may be constant or adjustable by means of a calibrated and adjustable fulcrum disposed in relation to the flex beam.

3,596,544

MACHINE TOOL CUTTING INDICATION AND CONTROL

Malcolm H. Pitman, Scotia, N.Y., assignor to General Electric Company

Filed Feb. 28, 1969, Ser. No. 803,203
Int. Cl. B23b *3/06*
U.S. Cl. 82—1 R **7 Claims**



Circuit means are provided for sensing the no load power into an electrical motor for driving machine tool and storing an electrical signal representative thereof. Power input in response to loading of said motor is also sensed. Circuit means are provided responsive to the difference in the no load and load power signals to provide a resultant signal varying in accordance with the magnitude of the difference. The existence of the signal indicates contact of the cutting tool with the workpiece and the magnitude of such signal indicates the degree of engagement.

3,596,545

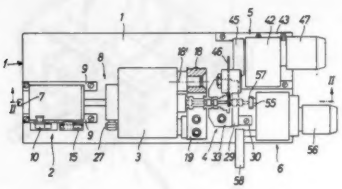
AUTOMATIC MACHINE TOOL FOR WORKING ELONGATED MATERIAL IN INCREMENTS

Horst E. Eisenhardt, Weinsberg, Germany, assignor to Conver-Maschinenbau GmbH & Co. KG

Filed June 11, 1969, Ser. No. 832,087
Int. Cl. B23b *13/02*
U.S. Cl. 82—2.5 **9 Claims**

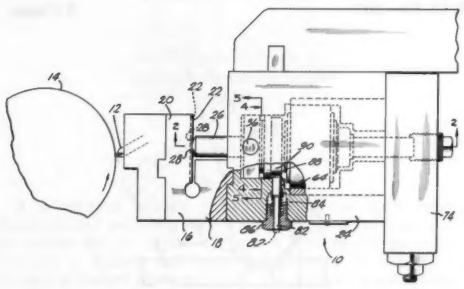
Automatic lathe for working elongated material in increments. The lathe has a feed head at one end, a head stock intermediate its ends carrying rotating cutting tools and a collet

for holding the material from rotation, a tail stock spaced in advance of the head stock and having gripping jaws conforming to and gripping the formed material for severing by a cutoff tool. The feed head grips and advances the material along the head stock and tail stock. The cutting tools carried by the head stock rotate about the material and form an increment of the material in a single forming operation. The



tail stock carries gripping jaws movable inwardly in parallel planes in synchronism to grip and hold the material from rotation for the cutting off of a complete article. A second tail stock having gripping jaws may be spaced in advance of the first tail stock, to cooperate with the jaws in the first tail stock to further hold the material during a severing operation.

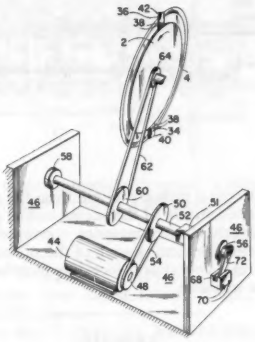
3,596,546
MACHINE TOOL RESETTING APPARATUS
John L. van den Kieboom, St. Clair Shores, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.
Filed Sept. 11, 1968, Ser. No. 759,081
Int. Cl. B23b *21/00*
U.S. Cl. 82—24 **3 Claims**



Apparatus for periodically moving a machine tool, such as a cutting tool, to compensate for tool wear and automatically maintain a preestablished position of the tool within predetermined tolerance limits. In response to a signal indicating the necessity for resetting the cutting tool to compensate for wear, a cam and cam follower structure are actuated to provide for adjustable movement of the tool through a predetermined incremental distance. The cam and cam follower structure are arranged to prevent automatic adjustment of the tool beyond a predetermined limit, and a signal is given when this predetermined limit is reached so that the apparatus of this invention can be reset.

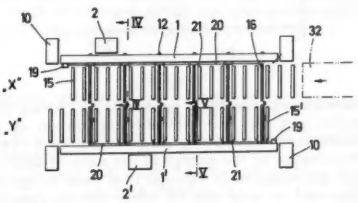
3,596,547
CUTTING TOOL
John D. Alexander, Hawthorne, N.J., assignor to Lever Manufacturing Corporation, Paterson, N.J.
Filed Oct. 24, 1969, Ser. No. 869,257
Int. Cl. B23b *5/14*
U.S. Cl. 82—53 **27 Claims**

An improved rotary cutting tool for use in cutting or slicing rolls of a material is a combination gouge device for removing waste material formed by a double edged cutting blade and a cutting device for slicing or cutting a core element upon which said material is rolled. Positioning means are provided to insure that the gouging device does not contact the core element during the final slicing operation. In one embodiment of the invention the basic blade has a beveled cutting edge and contains at least one gouging tooth inset into the blade periphery which is extended into its



operational position by centrifugal force when the tool is rotated. A limit switch operating in connection with a vane element and a braking means affixed to the driving mechanism for the blade may also be used to stop the rotation of the tool in the desired position for severing the central core element of the roll.

3,596,548
APPARATUS FOR CONTINUOUSLY FORMING EDGES OF STEEL PLATES INTO BEVELING
Kazuo Nagai, Chiba; Masami Fuchigami, Okayama; Isao Yamato, Okayama, Japan, and Manfred Lortz, Rheydt Rhineland, Germany, assignors to Maschinenfabrik, Froriep GmbH, Rheydt, Germany
Filed July 17, 1969, Ser. No. 842,498
Claims priority, application Japan, July 19, 1968, 43/51382
Int. Cl. B26d *3/02*
U.S. Cl. 83—3 **3 Claims**

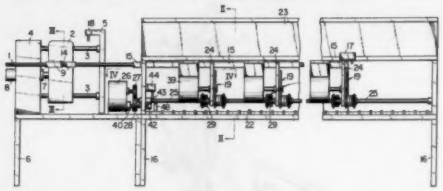


Steel plate edge beveling apparatus having a pair of elongate beveling tables with associated beveling tools and conveyor means between the tables for moving plates longitudinally of the tables and laterally between the tables.

3,596,549
CUTTING MACHINE FOR TUBE BEING FED IN A CONTINUOUS LENGTH
Katsuji Miyazaki, 111, Eifuku-cho, Suginami-ku, Tokyo, Japan
Filed May 23, 1969, Ser. No. 827,250
Claims priority, application Japan, Dec. 14, 1968, 43/91367
Int. Cl. B26d *11/00*
U.S. Cl. 83—37 **11 Claims**

A machine which provides structure for continuously severing a main length of tubing being fed from a feeder means, such as an extruder, first cutting the advancing tubing into primary lengths, and, then, severing each of the primary lengths into a plurality of relatively short lengths. The

machine includes a first reciprocally moving cutting station with support and guide means for moving it along the path of movement of advance of the tubular material. This station includes a cutter operable while the primary cutting station is moving in parallel and at a similar velocity to that of the advancing tube to cut a primary length from the advancing tube on each advanced stroke of the reciprocating primary cutter. The cutting machine also includes conveyor means and a secondary station for cutting each of the primary lengths into a plurality of relatively short secondary lengths which are the product of the machine.

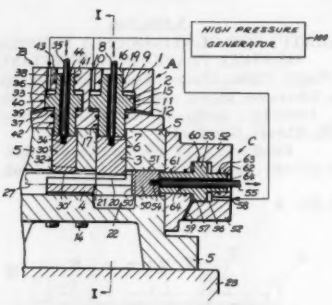


3,596,550

CUTTING DEVICE FOR THE METALIC MATERIAL

Hiroshi Tominaga, Kanagawa-ken, Japan, assignor to Tokyu Sharyo Seizo Kabushiki Kaisha, Kanagawa-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Mar. 12, 1969, Ser. No. 806,646
Claims priority, application Japan, Mar. 19, 1968, 43/17852
Int. Cl. B26d *7/02*
U.S. Cl. 83—390 **8 Claims**



This invention concerns an apparatus for cutting off metallic material and the like with the application of shearing force which comprises cutting means including a cutting tool which is actuated by the energy in the form of fluid pressure conveyed instantaneously through fluid from a high-pressure generator, and at least one of other means, namely, work holding means capable of holding the work with an adequately strong force, compression means capable of exerting a compressive force on the work in the direction normal to the shearing direction, and means for regulating the speed at which the cutting tool operates, said cutting means and said one of means being combined together to constitute cutting functional means which can instantaneously cut off a work of metallic material or the like with a great composite shearing force, not with the simple shearing force of conventional shears.

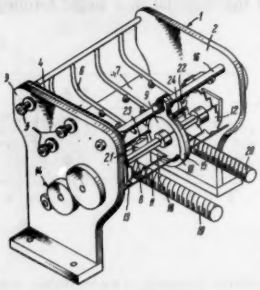
3,596,551

DEVICE FOR PIECE-BY-PIECE FEEDING OF BAR BLANKS

Konstantin Lukich Lyamets, ulitsa Iskorovskaya, 1, kv.36, Kiev, U.S.S.R.

Filed Nov. 4, 1969, Ser. No. 873,854
Int. Cl. B26d *7/06*
U.S. Cl. 83—417 **2 Claims**

The present invention relates to devices for piece-by-piece feeding of bar blanks. The device consists of a hopper for the blanks, a disc with a drive for its rotation, said disc having pockets for the blanks and provided with a clamp fitting around the disc and keeping the blanks in place during disc rotation, a device for shaking the blanks in the hopper, a



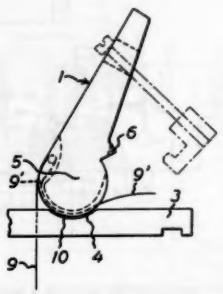
blank cutter and at least one pair of magnets arranged so that their magnetic fields attract the blanks to the disc. The invention can be used most effectively for piece-by-piece feeding of bar blanks of a large length and small diameter with an insufficient stiffness, particularly bicycle wheel spokes.

3,596,552

DEVICES FOR SECURING STRINGS IN MUSICAL INSTRUMENTS

Birger Lager, Vetlanda, Sweden, assignor to AB Nordiska Piano, Brogdsgatan, Vetlanda, Sweden

Filed Feb. 13, 1970, Ser. No. 11,196
Claims priority, application Sweden, Feb. 17, 1969, 2179/69
Int. Cl. G10c *3/10;* **G10d** *3/12*
U.S. Cl. 84—207 **3 Claims**



A device which serves to secure strings in pianos and like stringed instruments in a simple and reliable manner with the aid of a swingably mounted tension element having an arcuate portion and a likewise arcuate groove therein, in which the string is placed in a state folded back upon itself so as to be clamped in the groove by wedge action when the element is swung and thereby tensioned.

3,596,553

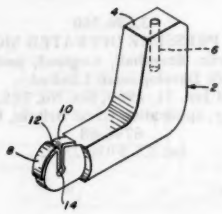
ARTICLE FOR REPAIRING DROP-ACTION PIANOS

Ernest Vagias, 265 Prospect St., Baden, Pa.

Filed Nov. 12, 1969, Ser. No. 875,694
Int. Cl. G10c *3/18*
U.S. Cl. 84—240 **4 Claims**

Disclosed are an article and method that make it possible to lessen remarkably the time and labor required for replacing brittle or broken shoes or elbows in drop-action pianos. I provide a shoe that has a vertically extending cushioned slot in its wippen end. This makes it possible to snap the shoe or elbow into place, in contact with the pin in the wippen, obviating the necessity in a shoe-replacement job of removing

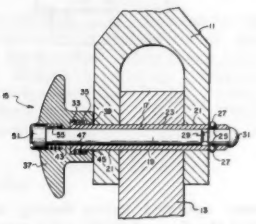
the piano to the tuner's shop and withdrawing the wippens from the action and withdrawing and reinserting of the wippen pins, as has hitherto customarily been necessary in such a job.



3,596,554
SAFETY-TYPE LOCKING PIN

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with Respect to an Invention of; Ture E. Othman, Northridge, Calif.; Ervin P. Nelson, Malibu, Calif., and Lawrence J. Zmuda, Sepuleveda, Calif.

Filed May 19, 1970, Ser. No. 38,814
Int. Cl. F16b *19/00*
U.S. Cl. 85—5 B **7 Claims**



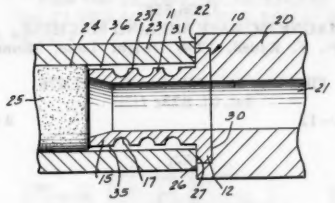
A safety-type locking pin for joining two load-carrying members and including means for preventing removal of the pin unless the pin is free of load. A slidable plunger moves between a locked and unlocked position of the pin by plunger actuation of detent balls. The plunger is spring-urged toward the locked position. A handle on the end of the pin opposite the detent balls is slidable against a spring to a position that interferes with the plunger being maintained in the unlocked position that is necessary to remove the pin. However, if the pin is free of load, and thus withdraws easily from the joined members, the pin will withdraw from the members and the handle will not shift to the interferring position.

3,596,555
FIRING CHAMBER SEAL

Duane A. Somers, Port Clinton; Edward S. Daniels, Port Clinton, and William E. Lahey, Oakharbor, all of, Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed May 5, 1969, Ser. No. 821,639
Int. Cl. F41c *21/00*
U.S. Cl. 89—26 **2 Claims**

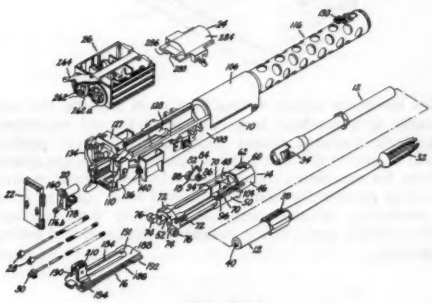
A combination projectile guide and firing chamber seal especially adapted for use in caseless cartridge firing weapons. The seal consists of a tubular member which is adapted to be attached to the breech end of a weapon barrel with a tubular portion projecting into the firing chamber in close spaced relation to the inner diameter wall thereof. The outer diameter of the seal has a series of annular pressure drop grooves which successively reduce the propellant gas pressure. The front end of the tube has an increased diameter conical counterbore adapted to guide a projectile to the main bore which is concentric with and has a diameter equal to the bore of the weapon barrel. The presence of a pressure differential caused by the annular grooves allows the front end of the seal to circumferentially expand within the firing chamber, thereby further reducing the gas flow.



3,596,556
FEEDER DRIVE

Alfred L. Montana, East Longmeadow, Mass., assignor to General Electric Company

Filed Apr. 7, 1969, Ser. No. 814,094
Int. Cl. F41d *9/02*
U.S. Cl. 89—33 SF **9 Claims**

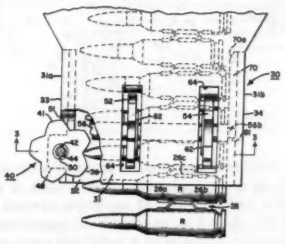


A machine gun is disclosed with a recoil and counterrecoil operated crank mechanism which has spaced detents to two-step drive a feeder sprocket assembly.

3,596,557
POSITIONING DEVICE FOR CORRECTING MISLINKED AMMUNITION

Robert W. Henshaw, Shelburne, Vt., assignor to General Electric Company

Filed Jan. 2, 1968, Ser. No. 695,145
Int. Cl. F41f *9/00*
U.S. Cl. 89—33 C **6 Claims**



A device for correctly positioning mislinked ammunition in a linked ammunition belt, including, a toothed wheel supported from an open-ended housing through which the belt passes, wherein the wheel teeth engage the bullet ends of in-

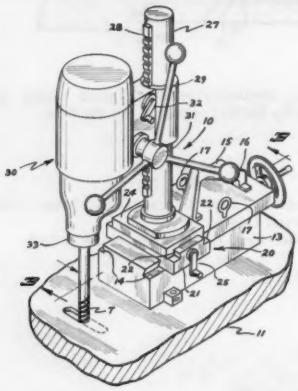
dividual rounds for automatically realigning said mislinked rounds with respect to the other rounds in the belt.

3,596,558

MAGNETIC BASE MILLING MACHINE

Edmund W. F. Rydell, 1900 Dwight Lane, Minnetonka, Minn.

Filed May 16, 1969, Ser. No. 827,476
Int. Cl. B23c *1/20*
U.S. Cl. 90—12 **4 Claims**



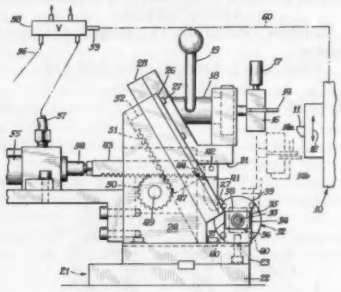
This invention relates to machine tools and the like and primarily to a machine tool capable of triaxial movement with electromagnetic means included in the base portion thereof to permit the unit to be attached to various magnetic surfaces for machining thereof. The electromagnetic mounting means permits the unit to be moved from place to place for machining selected areas of relatively large surfaces which normally could not be machined with standard milling equipment.

3,596,559

SHUTTLE FIXTURE FOR BROACH OR THE LIKE

Arthur R. Gregersen, Hinsdale, Ill., assignor to Ty Miles, Inc., Westchester, Ill.

Filed July 17, 1969, Ser. No. 842,665
Int. Cl. B23d *41/02*; **B23q** *3/18*
U.S. Cl. 90—76 **13 Claims**



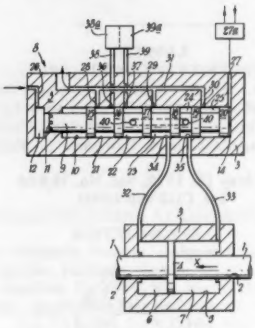
A workpiece holder is mounted in front of a broach cutting tool moving along a vertical path. The holder is on a slide which is movable downwardly at an angle toward the path. The bottom of the slide has an abutment positioned to contact one of a plurality of faces of a rotatable stop means. The faces of the stop means are at different radial distances from the axis of rotation so that when the abutment is against one of the faces the holder is closer to the path than when the abutment is against another of the faces. Power means are connected to the slide an to the stop means to raise the slide after a downward cutting movement of the broach and, after an upward movement of the broach, to rotate the stop means to present a new face and to lower the slide against that new face.

3,596,560

FLUID PRESSURE OPERATED MOTORS

Philip Butterworth, Bramhall, England, assignor to Butterworth Hydraulic Developments Limited

Filed Jan. 31, 1969, Ser. No. 795,536
Claims priority, application Great Britain, Feb. 12, 1968, 6796/68
Int. Cl. F01b *25/02*
U.S. Cl. 91—6 **6 Claims**



A fluid pressure operated motor having valve means adapted to control the flow of fluid under pressure to the pressure chambers from two separate sources of fluid under pressure, the valve means so controlling the flow of fluid that, in a first controlled position of the valve means, fluid from both sources is admitted into a first pressure chamber simultaneously with the second pressure chamber exhausting to cause the piston to move axially in one direction and, in a second controlled position of the valve means, fluid from only one of the sources is admitted into the second pressure chamber simultaneously with the first pressure chamber exhausting to cause the piston to move axially in the opposite direction.

3,596,561

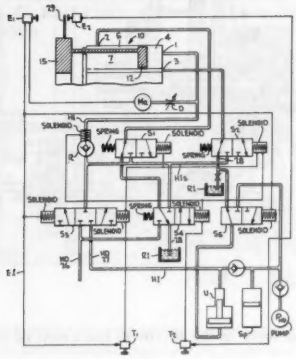
HYDRAULIC CLAMPING ARRANGEMENTS FOR INJECTION MOULDING MACHINES

Heinrich Keller, Bad Oeynhausen, Germany, assignor to Stubbe Maschinenfabrik G.m.b.H., Kalletal-Kalldorf, Germany

Continuation-in-part of application Ser. No. 623,427, Mar. 15, 1967, now abandoned. This application Jan. 8, 1969, Ser. No. 789,909
Int. Cl. F01b *25/04*; **F15b** *11/08, 13/044*
U.S. Cl. 91—20 **4 Claims**

A mold-clamping plate is attached to one end of a tubular piston rod the other end of which is attached to an annular piston. The piston is slidably mounted in an outer cylinder and surrounds a concentric inner cylinder along which it is slidable. Hydraulic pressure applied to the full area face of the piston moves the clamping plate to a clamping position. Hydraulic pressure applied to the annular face of the piston via the space between the piston rod and the outer cylinder moves the clamping plate to a nonclamping position and during this movement oil is transferred from the full-face side of the piston to the space between the piston rod and the inner

cylinder, being returned during the next clamping stroke of the piston. Feed and transfer of oil is controlled by hydraulic



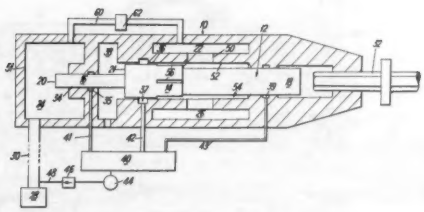
flow control valves operated under control of electrical switches.

3,596,562

TRANSDUCER FOR CONVERTING FLUID PRESSURE OSCILLATIONS INTO MECHANICAL OSCILLATIONS

Keith Foster, Birmingham, England, and John Duff, Fredericton, New Brunswick, Canada, assignors to National Research Development Corporation, London, England

Filed Jan. 10, 1969, Ser. No. 790,225
Claims priority, application Great Britain, Jan. 12, 1968, 1945/68
Int. Cl. F01b *7/18*
U.S. Cl. 91—235 **12 Claims**



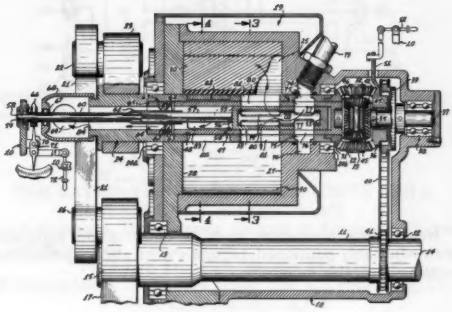
A transducer for converting fluid pressure oscillations into mechanical oscillations comprising a piston member in a cylinder, the piston member and the cylinder being relatively movable, first and second opposing faces of the piston member being respectively disposed in first and second chambers in the cylinder, each chamber being adapted to contain fluid under pressure, and means for connecting at least the said first chamber to a respective source of oscillating pressure fluid to cause relative oscillating movement of the piston member and the cylinder, excessive relative movement of the piston member and the cylinder in one sense being limited by a snubber, the piston and cylinder being predisposed to relative movement in the opposite sense to a predetermined position by means including limited fluid flow between the first and second chambers, valve means being provided to vent the fluid from the second chamber to drain when the piston and cylinder are in said predetermined position.

3,596,563

OSCILLATING VANE STEAM ENGINE

Willard E. Buck, P.O. Box 671, Lake Havasu City, Ariz.

Filed May 22, 1969, Ser. No. 826,930
Int. Cl. F01l *31/00*; **F01c** *9/00*; **F01l** *33/02*
U.S. Cl. 91—252 **5 Claims**



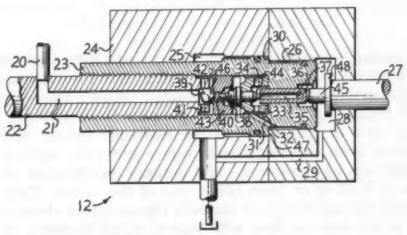
An oscillating vane steam engine having a double differential control mechanism for the steam supply for operating the engine.

3,596,564

CLUTCH BOOSTER MEANS

Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 20, 1969, Ser. No. 808,903
Int. Cl. F15b *9/10*; **F01b** *31/00*
U.S. Cl. 91—370 **6 Claims**



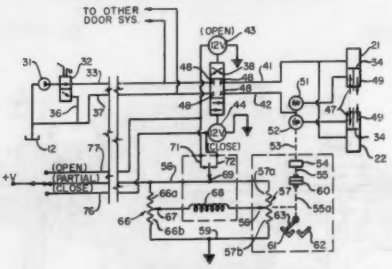
A clutch booster means is operatively connected between a clutch pedal and a clutch actuating linkage to provide a hydraulic boosting force for aiding the operator in effecting clutch disengagement. The booster means comprises a piston attached to the clutch actuating linkage and means for communicating a pressurized fluid behind the piston when the pedal is depressed for clutch disengagement purposes. Upon pedal release, such means automatically functions to exhaust such pressurized fluid to permit the piston and clutch to return to their normal, clutch engagement positions.

3,596,565

REMOTELY CONTROLLED HYDRAULIC SYSTEM

Duane Edward Atkinson, 136 Newton Drive, Burlingame, Calif.

Filed July 25, 1969, Ser. No. 844,839
Int. Cl. F15b *11/16*
U.S. Cl. 91—411 R **14 Claims**



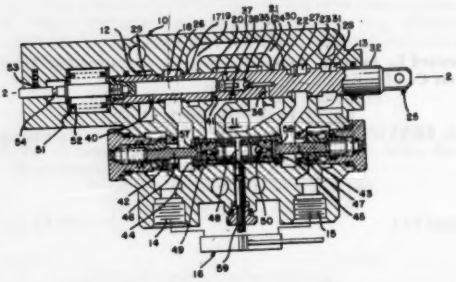
Heavy duty equipment such as construction equipment with adjustably positioned, remotely controlled, hydraulically actuated movable members.

3,596,566

HYDRAULIC VALVE

Robert D. Krehbiel, Hutchinson, and Homer R. Graber, Pretty Prairie, both of, Kans., assignors to The Cessna Aircraft Company, Wichita, Kans.

Filed May 15, 1967, Ser. No. 638,226
Int. Cl. F15b *13/042, 11/08*
U.S. Cl. 91—420 **11 Claims**



A manually operated spool-type closed-center flow control valve having two lockout check valves, one for each end of a double-acting pressure-fluid-actuated motor. The valve affords precise spool metering of pressure fluid returning from either end of the motor to the hydraulic system reservoir because both lockout check valves are fully opened and maintained open prior to, and entirely independent of, any flow of fluid to or from either end of the motor. Thus fluid flowing through either of the fully open lockout check valves can in no way interfere with precise spool metering of flow through the control valve. The flow-metering spool can also be positioned to afford floating movement of the motor plunger and rod in either direction in response to an applied external load.

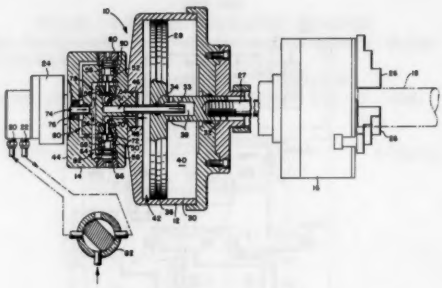
3,596,567

FAIL-SAFE VALVE ASSEMBLY FOR POWER CHUCK MOTORS AND THE LIKE

Milton L. Benjamin; David D. Walker, both of Chagrin Falls, Ohio, and Erickson Tool Company, Solon, Ohio

Filed Aug. 12, 1969, Ser. No. 849,374
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—420 **10 Claims**

A fail-safe control valve assembly for rotatable fluid motors. The valve assembly rotates with the motor and a pair of free floating check valve members of the assembly are movable radially against their valve seats aided by centrifugal action to trap fluid in the motor in the event of loss of source pressure.



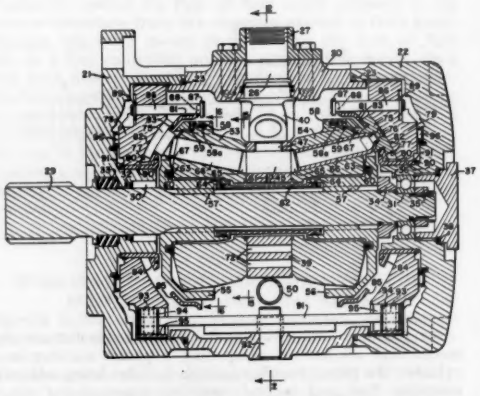
One of the check valve members controls inlet flow and the other exhaust flow, or vice versa, depending upon the direction in which the motor is actuated. Valve spools exposed to the inlet and exhaust flow pressure differential act on the valve members to hold that valve member controlling exhaust flow removed from its valve seat. The spools are radially movable outward away from the valve seats to facilitate valve closing.

3,596,568

FLUID-TRANSLATING APPARATUS

Richard Arthur Wittren, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 14, 1968, Ser. No. 767,318
Int. Cl. F01b *3/00;* **F04b** *1/02*
U.S. Cl. 91—472 **31 Claims**



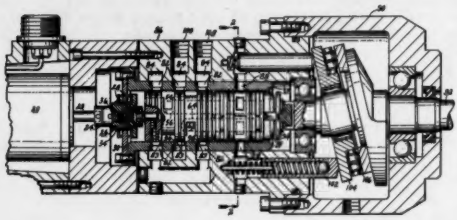
A constant pressure variable displacement axial piston pump employing two stroking cams and two banks of opposed pistons mounted in circular array in rotary cylinder barrels positioned on opposite sides of a flat port plate. The stroking cams and piston slippers have arcuate concave cam and convex bearing surfaces, respectively, formed about an axis which intersects and is perpendicular to the axis of rotation of the cylinder barrels. With this construction, each piston will be forced through two strokes per revolution of the cylinder barrels, all radial forces will be in inherent balance, and there will be an area contact between the piston slippers and the stroking cams at all times.

3,596,569

VALVE FOR A CLOSED-LOOP HYDRAULIC TORQUE AMPLIFIER

Jerry D. Wisbey, Loveland, Ohio, assignor to The Cincinnati Milling Machine Co., Cincinnati, Ohio

Filed June 3, 1969, Ser. No. 830,076
Int. Cl. F01l 33/02; F15b 9/10; F01b 3/02
U.S. Cl. 91—503 5 Claims



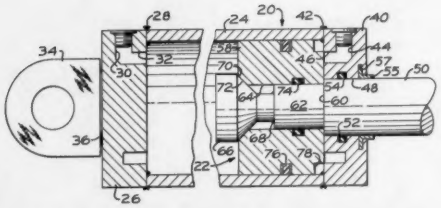
A torque amplifier for translating a number of digital input pulses into a proportional angular displacement of a rotary piston and cylinder hydraulic motor. The input pulses drive an electric stepping motor which imparts a linear displacement to a valve. The valve displacement functions to meter fluid into the valve and consequently to the hydraulic motor. The hydraulic motor, through a coupling means, transmits its rotation back to the valve. The valve rotation, first, operates to sequentially distribute the fluid from said valve to the hydraulic motor cylinders, and second, provides a mechanical feedback to displace the valve back to its neutral position.

3,596,570

FRICTION-WELDED HYDRAULIC ACTUATOR

Alexander M. Kenyon, Cuyahoga County, Ohio, assignor to Towmotor Corporation, Cleveland, Ohio

Filed Sept. 10, 1969, Ser. No. 856,618
Int. Cl. F16j 1/12, 1/00; B23p 15/00
U.S. Cl. 92—168 26 Claims



A hydraulic actuator is entirely assembled by means of a plurality of friction welds. The construction permits the elimination of many parts formerly necessary in such actuators, reduces, the possibility of fluid leakage, and reduces the overall length of the actuator as compared with prior art actuators having the same length of stroke.

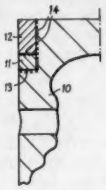
3,596,571

PISTONS

Harold T. Hill, Sway, near Lymington, England, John Robson, Lymington, England, and Roger A. Day, Lymington, England, assignors to Wellworthy Limited, Lymington, England

Filed July 7, 1969, Ser. No. 839,515
Claims priority, application Great Britain, July 15, 1968, 33,714/68
Int. Cl. F02f 7/00; F16j 1/04; F16j 1/00
U.S. Cl. 92—222 9 Claims

This invention relates to a piston for an internal combustion engine, compressor or the like, which is composed of at least two mating parts, for example a light alloy piston body part and a wear-resistant ring groove carrier part or heat-resistant crown part, the parts being permanently assembled



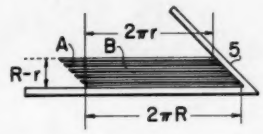
together by friction welding. The invention also relates to a method of making such pistons.

3,596,572

INSULATION FOR POWER CABLE JOINTS AND A METHOD OF MAKING SAME

Kenji Matsuura, Ikeda, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 11, 1969, Ser. No. 815,432
Claims priority, application Japan, Apr. 12, 1968, Aug. 27, 1968, 43/24,027;43/73,355
Int. Cl. B31d
U.S. Cl. 93—1 5 Claims



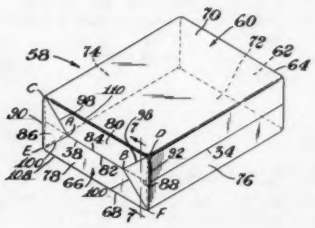
An insulation for power cable joints wherein a previously shaped split-type paper cylinder is placed over the cable core such that the outside edge thereof forms a snaillike borderline.

3,596,573

FLAT BOTTOM BAG AND METHOD OF MAKING THE SAME

William E. Shrum, St. Louis, Mich., assignor to The Dow Chemical Company, Midland, Mich.

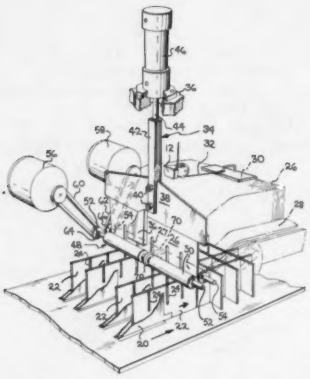
Division of Ser. No. 687,630, Dec. 4, 1967, Pat. No. 3,485,439
Filed June 2, 1969, Ser. No. 840,088
Int. Cl. B31b 49/04
U.S. Cl. 93—35 R 5 Claims



This invention pertains to a flat bottom bag formed from flexible tubular material by making a pair of folds and a single seal. Specifically, the bag is formed by longitudinally folding the edge portions of a collapsed flexible tube inwardly to a superposed position on the main body portion thereof not extending beyond the longitudinal centerline of the tube. A transverse seam is then formed across the width of the tube adjacent the free edges at one of its ends securing together

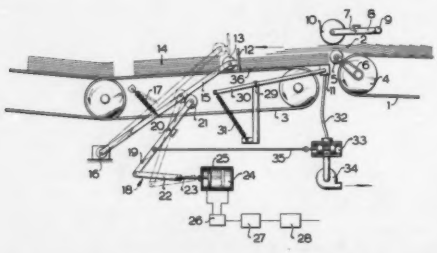
therealong the overlying plies comprising the folded tube. This completes the structure of a basic bag element from which a flat bottom bag can be formed. Several methods are taught as suitable for shaping the secured end of the above bag element to form the desired flat bottom structure. For example, by turning the bag element inside out and shaking out its folded edge portions a flat bottom bag is readily obtained.

3,596,574
PARTITION ROLL FEED APPARATUS
Tadeusz Kozlowski; Glenn W. Maze, and Francis A. McCormick, all of Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed Feb. 4, 1970, Ser. No. 8,659
Int. Cl. B31b *11/02, 11/14;* **B31d** *3/04*
U.S. Cl. 93—37 R **8 Claims**



Apparatus is provided for assembling longitudinal and transverse partition strips to produce cell-type fillers for a carton. Longitudinal partition strips are advanced in parallel spaced relationship into position to receive transverse partition strips fed from above by the combined action of a knocker bar and driven feed rolls. The knocker bar is employed to advance the individual transverse partition elements into the nip of a pair of high-speed feed rolls which drive the transverse partition members at a high speed downwardly into assembled relation with the longitudinal partition members.

3,596,575
BUNDLING APPARATUS FOR FLATTENED TUBE SECTIONS MADE BY A TUBE-MAKING MACHINE
Friedrich Franz Brockmuller, Lengerich, Germany, assignor to Windmoller & Holscher, Lengerich, Germany
Filed Dec. 23, 1969, Ser. No. 887,631
Claims priority, application Germany, Dec. 24, 1968, P 18 16 977.2
Int. Cl. B65h *33/00*
U.S. Cl. 93—93 DP **8 Claims**

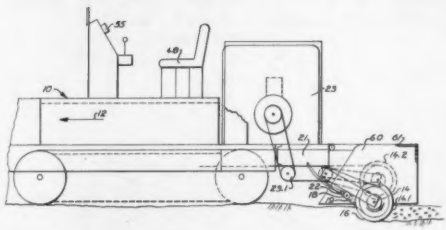


A bundling apparatus for flattened tube sections coming from a tube making machine comprising a first conveyor for depositing the tube sections from the machine thereon in an overlapping scale formation followed by a continuously movable second conveyor for transporting the tube sections after they have been formed into bundles. A suction beam engages and holds the lowermost tube section of each bundle on the second conveyor and is adapted to have its suction effect interrupted after each bundle has been formed with a predetermined number of tube sections. A substantially vertical abutment plate for the tube sections has its bottom edge disposed immediately above the conveying run of the second conveyor during formation of each bundle and is adapted to be raised after the formation of each bundle.

3,596,576
SYNTHETIC GOLF GREEN
Carl J. Cicero, and Robert T. Witherspoon, Jr., both of Decatur, Ala., assignors to Monsanto Chemical Company, St. Louis, Mo.
Filed Nov. 29, 1968, Ser. No. 780,259
Int. Cl. E01c *7/00*
U.S. Cl. 94—7 **6 Claims**

The performance characteristics, i.e., ball response and contour maintenance, of a golf green covered with a synthetic turf product are improved by stabilizing the sandy subsurface, prior to laying down the turf, with a liquid elastomer.

3,596,577
APPARATUS FOR SOIL STABILIZATION
Donald A. Chennells, 13 Iroquois Bay, St. Boniface 6, Manitoba, Canada
Filed Dec. 2, 1968, Ser. No. 780,472
Int. Cl. E01c *19/02*
U.S. Cl. 94—40 **4 Claims**

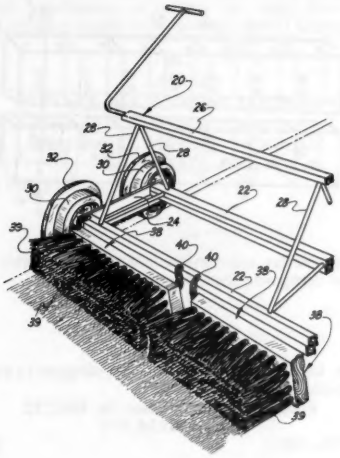


The method and apparatus for soil stabilization wherein the soil to be stabilized is first shaved and the shavings rubbed against the resultant soil face while at the same time applying a liquid stabilizing additive. The apparatus employed includes a driven reel having shaving and rubbing elements thereof which continuously, as the reel is rotated and moved over the ground, first shave the sol to provide a soil face, then pulverize the shavings and rub the shavings against the soil face as a liquid stabilizing additive is sprayed onto the pulverized soil so as to be mixed therewith as the reel rotates.

3,596,578
APPARATUS FOR FINISHING CONCRETE SURFACES
Mason Eugene Jones, Columbus, Ohio, assignor to Mason E. Jones, Inc., Columbus, Ohio
Filed Jan. 14, 1969, Ser. No. 791,068
Int. Cl. E01c *23/08*
U.S. Cl. 94—45 **4 Claims**

An apparatus for finishing the surface of concrete pavements which includes a frame means provided with rotatably mounted wheels adapted to ride along the forms used in concrete paving construction. The frame means includes a plurality of brushlike or bristled finishing members flexibly

connected thereto for limited vertical movement responsive to the contour of the pavement being finished and adapted to



impart upon the surface of the pavement a plurality longitudinal grooves of relatively uniform depth.

3,596,579

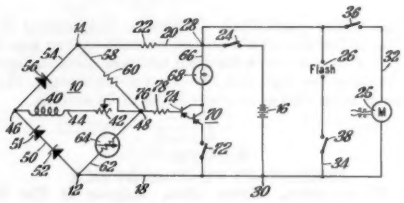
EXPOSURE CONTROL AND LOW-LIGHT WARNING SYSTEM

John F. Coughlin, and Ralph I. Berge, both of Binghamton, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed June 25, 1969, Ser. No. 836,378

Int. Cl. G01j *1/44*; **G03b** *17/18, 19/18*

U.S. Cl. 95—10 **8 Claims**



A bridge is connected across the terminals of a low voltage camera battery through a voltage-dropping resistor. The four arms of the bridge contain, reading clockwise from the positive terminal thereof, 1) a plurality of diodes leading to one null terminal, 2) single diode leading to the negative terminal, 3) a balancing resistor leading to the other null terminal, and 4) a photocell leading to such positive terminal. The central crossarm contains an exposure control galvanometer and an adjustable resistor in series between the null terminals. A low-light warning lamp circuit is connectable across the battery by a switch and is provided with a Darlington transistor circuit having its base connected through a resistor to the null terminal leading to the photocell for limiting current to such base and isolating the galvanometer circuit from the Darlington transistor circuit. Thus, in operation, changes in the battery voltage result in only a very slight change in current through the galvanometer at a single light level, while the Darlington transistor circuit provides a high gain resulting in the turn "ON" point of the low-light warning lamp to be sharply defined.

3,596,580

CAMERA SHUTTER TIMING CUTOFF SWITCH

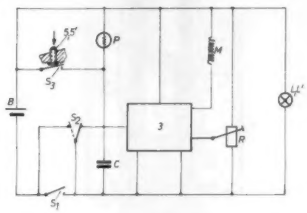
Waldemar T. Rentschler, Calmbach, Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach, Black Forest, Germany

Filed July 15, 1969, Ser. No. 841,724

Claims priority, application Germany, July 25, 1968, P 17 72 948.5

Int. Cl. G03b *9/62, 17/18*

U.S. Cl. 95—10 C **6 Claims**



A photographic camera that has an electronic timing device controlled in dependence upon light conditions by a photosensitive resistor in the circuit of the timing device. A lamp is disposed in the circuit to indicate the open state of the camera shutter and a manually operated switch is placed in the circuit and is operable to cause the camera shutter to close independently of the action of the timing device. A switch button formed as a translucent body is connected to the switch and is disposed to be illuminated by the lamp to indicate the open state of the camera.

3,596,581

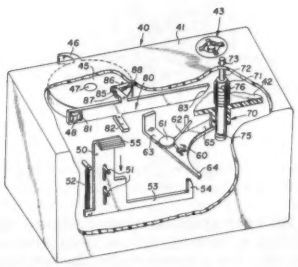
PHOTOGRAPHIC APPARATUS FOR FIRING PERCUSSION-IGNITABLE FLASH LAMPS

Joseph V. Poweska, and Jeffrey R. Stoneham, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 11, 1968, Ser. No. 766,751

Int. Cl. G03b *17/38*

U.S. Cl. 95—11 **1 Claim**



Photographic apparatus for use with percussion-ignitable flashlamps supported in a multilamp flash unit. The flashlamps each include a striker element releasably retained in a preenergized position and mounted for selective release at individual access sites on the unit. The apparatus is adapted to cooperate with such units through the access sites to effect selective release of individual striker elements in synchronization with picture-taking operations.

3,596,582

SYSTEM FOR REPLACING ENVIRONMENTAL FLUID IN BOREHOLES AND OTHER FLUID-CONFINING MEANS

Wayne L. Sayer, Bakersfield, Calif., assignor to Underground Surveys Corporation

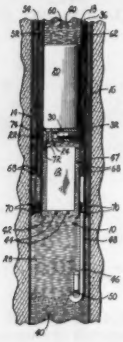
Filed July 26, 1968, Ser. No. 747,969

Int. Cl. G03b *19/00*

U.S. Cl. 95—11 **8 Claims**

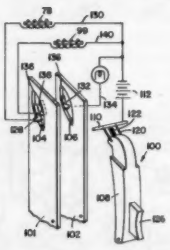
A system for replacing environmental fluid in boreholes and similar fluid-confining structures for photographic and

similar purposes. The system includes a cylinder having opposite ends, a transparent fluid in the cylinder, a piston in the cylinder adjacent to one end of the cylinder urged toward the opposite end, remotely operable flow control valve structure confining the transparent fluid within the cylinder and thereby releasably restraining the piston adjacent to said one



end, a conduit extended from said opposite end of the cylinder to an area to be photographed to deliver the transparent fluid thereto upon release of the piston, and a conduit extended from said one end of the cylinder to the area to be photographed to draw environmental fluid from said area into the cylinder for replacement purposes.

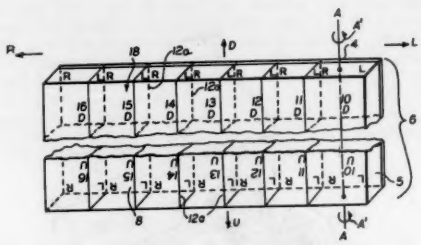
3,596,583
CAMERA
Peter N. Portugal, 21A Rowland Court, San Anselmo, Calif.
Filed July 15, 1968, Ser. No. 744,725
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 **12 Claims**



A camera for photographing closeup objects with a wide angle comprising a housing with a fixed aperture spaced close to a flat base and a mirror within the housing and rearwardly from the aperture for reflecting the viewed image upwardly to a horizontal plane. A light-sealing inner wall surrounds the mirror and cooperates with a film cartridge that fits within the upper portion of the camera. In a battery-powered circuit a main control switch operates in sequence a first mechanism for moving the shutter away from the aperture, a flashgun circuit for providing a momentary high intensity light and a third circuit for releasing a locking device which automatically advances the film in the cartridge to the next exposure frame.

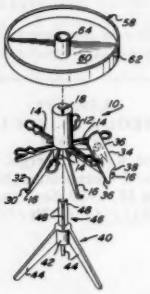
3,596,584
METHOD FOR CONVERTING RELIEF PHOTOGRAPHS
Harry S. Jones, Monmouth Beach, N.J., assignor to Chrom-Tronics, Inc., New York, N.Y.
Filed June 27, 1967, Ser. No. 649,311
Int. Cl. G03b *35/08*
U.S. Cl. 95—18 P **3 Claims**

Method of converting abnormal three-dimensional or relief photographic images into normal photographic reproductions thereof by physical separation of discrete film data strips selectively exposed through each lens element of a multiele-



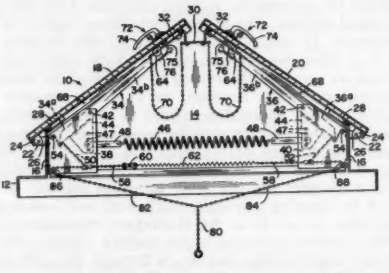
ment lens overlay rotation thereof and reassembly thereof into a true composite photographic reproduction.

3,596,585
FILM HOLDER
Walter A. Lewandowski, Hatboro, Pa., assignor to Uni-Chem Corporation, Pennsauken, N.J.
Filed Mar. 10, 1969, Ser. No. 805,772
Int. Cl. G03d *3/10*
U.S. Cl. 95—100 **5 Claims**



A film holder particularly adapted to hold dental X-ray film. The holder includes a pair of laterally spaced legs having notches therein and a third leg which is vertically spaced from the other two legs, and also has a notch therein. The X-ram film is supported at its edges in the three notches.

3,596,586
EMERGENCY VENTING DEVICE
Albert R. Krannich, Akron, Ohio, assignor to The Burt Manufacturing Company, Akron, Ohio
Filed Apr. 22, 1970, Ser. No. 30,839
Int. Cl. F23l *17/62*
U.S. Cl. 98—86 **10 Claims**



An automatic relief-type ventilator for a building with dampers or covers movable to and from open and closed

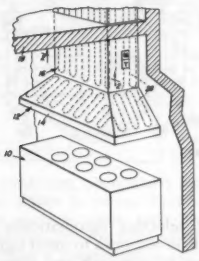
positions and damper-operating mechanism including a damper lift arm with a support means pivotally engaging each lift arm intermediate the ends thereof, latch means operatively engaging an end of each lift arm to latch the dampers in closed position, and fusible restraining means associated with the latch mechanism to release the same for automatic damper-opening action under predetermined heat conditions.

3,596,587

OFFTAKE FOR COOKING EQUIPMENT

James E. Klinger, 5714 S. 114th St., Hales Corners, Wis.

Filed May 21, 1969, Ser. No. 826,331
Int. Cl. F23j *11/00*
U.S. Cl. 98—115 **4 Claims**



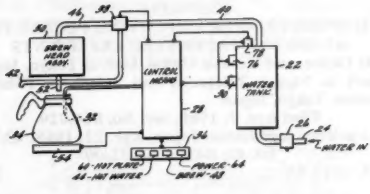
A cooking equipment offtake comprising hood, duct and related appurtenances with attached heating means for raising the inner surface temperature of said offtake and thus preventing the condensation of grease thereon.

3,596,588

AUTOMATIC BEVERAGE MAKER

Tillman R. Moss, Renton, Wash., assignor to General Electric Company

Filed Nov. 10, 1969, Ser. No. 875,043
Int. Cl. A47j *31/34*
U.S. Cl. 99—282 **6 Claims**



A small, compact beverage maker, particularly adapted for use in commercial aircraft and of the type which heats water and then passes the heated water through a beverage-producing material such as ground or powdered coffee, is provided with an improved protective control means related to the heating of water. Such control means affects the operation of water-heating means as a function of pressure in the water-heating container and temperature of the water heaters. In another form, such protective control means operates, in addition, as a function of liquid pressure, as a measure of volume, in a beverage server into which a brewed beverage is first deposited.

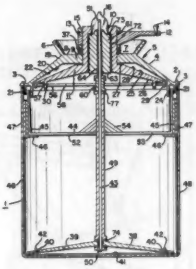
3,596,589

COFFEEMAKERS

Samuel Hertzberg, 740 Grand Concourse, New York, N.Y.

Filed June 26, 1969, Ser. No. 836,797
Int. Cl. A47j *31/42*
U.S. Cl. 99—286 **10 Claims**

Coffeemaker in which coffee may be brewed either by the open pot, the drip pot, or the percolator method. Consists of a bowl, a lid, and an internal structure emanating from the bowl interior and abutting the lid. The lid incorporates a coffee grinder. Two platforms, rotatably locked, fragment the coffee beans between cooperating milling surfaces, one platform maintained stationary while the other rotates subject to the application of torque. The coffee beans are infused



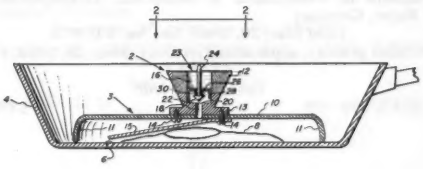
through a center gap in the exterior platform and the ground coffee is voided from the exit lips of the platforms directly into the bowl interior. Water may have been previously placed in the bowl or it may be poured in through the aforesaid center gap after the grinding. The lid remains seated on the bowl during the grinding, the brewing, and the serving processes.

3,596,590

COOKING UTENSIL

John Madison Harris, P.O. Box 12336, Palm Beach Gardens, Fla.

Filed July 22, 1969, Ser. No. 843,496
Int. Cl. A47j *37/10*
U.S. Cl. 99—345 **8 Claims**



A cover-type cooking utensil wherein food, such as an egg, is cooked on both sides at the same time. The cover-type cooking utensil having a cover with a knob or handle having a reservoir therein for liquid is placed over the food which has previously been placed on a heated surface such as a skillet or grill. Valve means are provided to admit the liquid such as water from said reservoir into the area enclosed by said cover whereby hot vapors such as steam is formed which cooks the side of the food facing the cover at the same time as the food facing the heated surface is cooked.

3,596,591

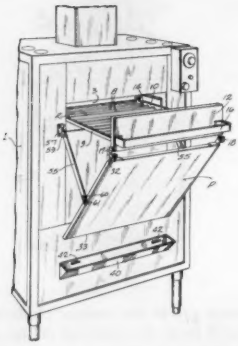
FOOD BROILER HAVING COMBINED SLIDEABLE FOOD RACK, DOOR AND DRIP PAN

William A. Spates, Beloit, Wis., assignor to Louis A. M. Phelan, Pompano Beach, Fla.

Filed Sept. 11, 1969, Ser. No. 857,043
Int. Cl. A47j *37/06*
U.S. Cl. 99—392 **19 Claims**

Food broiling apparatus of the type utilizing a side-loading broiling chamber through which a rack containing the food to be broiled is slid into and out of the broiling chamber. A door is attached to one end of the rack, which door fully closes the side opening and when the rack is fully in the broiler chamber; a downwardly extending drip pan is at-

tached to the door and is pivoted for swinging movement so that regardless of the extent to which the rack is pulled out of the broiling chamber the drip pan is located under the rack so as to catch any drippings therefrom. The discharge end of



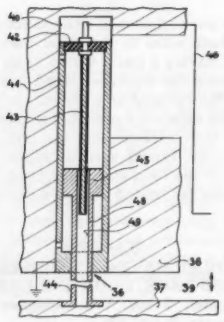
the drip pan moves only in a generally vertical direction so that it is always located over a lower receptacle into which the drippings can drain. Thus, a combined removable rack, door and swingable drip pan are provided for a side-loading-type broiler.

3,596,592

CAPACITIVE DETECTOR FOR A RAM MOVABLE ON A FRAME

Karl Trissnak, and Kurt Siller, both of Coburg, Germany, assignors to Langenstein & Schemann Aktiengesellschaft, Bayer, Germany

Filed Mar. 20, 1969, Ser. No. 808,972
Claims priority, application Germany, Mar. 20, 1968, P 17 63 002.3
Int. Cl. B30 *1/08*
U.S. Cl. 100—99 **5 Claims**



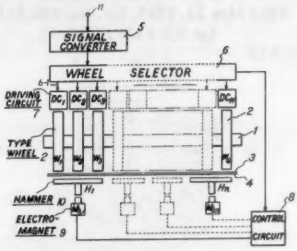
A capacitive detector for a ram of a press hammer where a rod forms one electrode of the capacitor and the wall of a bore forms the other electrode of the capacitor, the rod and bore being arranged so that one can move with the ram and the other is joined to a stationary frame.

3,596,593

ELECTROMAGNETIC SETTING MEANS AND HAMMER ACTUATING MEANS IN PRINT WHEEL ARRANGEMENTS

Tasaku Wada, Tokyo-to, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed June 5, 1968, Ser. No. 734,809
Claims priority, application Japan, June 29, 1967, 42/41263
Int. Cl. B41j *1/28, 9/38;* **H02k** *37/00*
U.S. Cl. 101—93 C **6 Claims**



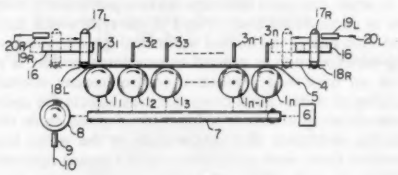
A printer for selecting automatically types of numerals and/or characters in response to input signals and for printing the selected types of numerals and characters on a printing paper, in which a plurality of type wheels are arranged rotatably on a shaft at regular intervals. Each of the type wheels has an even number of permanent magnets radially arranged from the center of the type wheel at regular intervals in the alternating arrangement of magnetic polarities of the permanent magnets. Type characters are fixed along the periphery of each type wheel at respective projections each arranged between adjacent two of the permanent magnets. One of the types is selected by rotating each type wheel in the clockwise or counterclockwise direction by driving alternately a pair of electromagnets arranged oppositely to one of the types and the pole of one of the permanent magnets respectively until the selected type opposes a print hammer.

3,596,594

HIGH-SPEED PRINTER EMPLOYING PLURAL PRINT HEADS AND PAPER FEED EXPEDIENTS

Kenichi Ukitsu, and Kosaku Mukai, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Apr. 7, 1969, Ser. No. 814,029
Claims priority, application Japan, Apr. 22, 1968, 43/26571
Int. Cl. B41j *1/54, 15/00*
U.S. Cl. 101—93 **1 Claim**

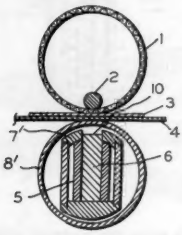


This invention relates to a high-speed printer to be used for output of data transmissions. The printing mechanism of this invention employs a high-speed print system and a plurality of print heads arranged in parallel, whereby mechanical-type selecting operation can be simplified. Further, the invention also employs a novel controlling circuit, which is adapted to read out respective data to be printed from a memory device in correspondence with the mechanical operations. And further, the present printer provides a novel line feed mechanism and spacing mechanism.

3,596,595
SCREEN PRINTING MACHINE WITH MAGNETIC WORK SUPPORT

Peter Zimmer, 6330 Engelhardstrasse, Kufstein, and Willibald Ruckl, Tirol, both of Austria, assignors to said Peter Zimmer, Kufstein, Austria by said Willibald Ruckl

Filed Aug. 27, 1968, Ser. No. 755,543
Claims priority, application Austria, Aug. 28, 1967, Sept. 4, 1967, A7874/67;A8065/67
Int. Cl. B41f *15/08, 15/18*
U.S. Cl. 101—120 **1 Claim**

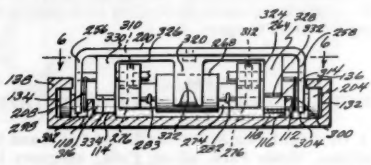


A device for the treatment, particularly for the printing, of flat-shaped material which is moved between two working elements exerting a pressure upon each other. One of the working elements, particularly the printing support of a printing form body, contains a magnet body consisting of a plurality of electromagnets whose magnet cores are arranged in one or more lines having preferably axes perpendicular to the flat shaped material to be treated. The magnet cores project into a stable support body directed to the flat-shaped material to be treated, covered, if the case may be, by a thin casing wherein the stable support body is provided with a recess or perforation passing through the line of magnet cores in whose zone the pole faces of the magnet cores end at a distance from the surface of the support body directed to the material to be treated.

3,596,596
GUIDE MEANS FOR TRAVELING ROLLER IN PORTABLE IMPRINTERS

Herbert G. Chillingworth, Annandale, Va., assignor to Farrington Business Machines Corporation, Springfield, Va.

Filed Dec. 3, 1968, Ser. No. 780,664
Int. Cl. B41f *3/20, 3/56*
U.S. Cl. 101—269 **9 Claims**

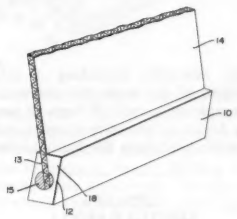


A portable imprinter is disclosed, the construction thereof being particularly compact. The imprinting head moves along a pair of tracks disposed at opposite sides of the print bed, the head being guided along the tracks by wheels and guide members disposed on the opposite sides of the bottom thereof to respectively minimize vertical motion of the head with respect to the print bed and rotational motion with respect to an imaginary vertical axis passing through the head. The printing plates are placed directly on the bed and appropriate means are provided for securing them to the bed. Means are also provided for securing the document over the print bed, these means becoming operative after the imprinting head has left its rest position. Also provided are means disposed within the imprinting head for adjusting the initial clearance between the roller platen and the print bed, these means being operative to move the roller platen shaft downwardly against the upwardly acting force exerted by a spring disposed within the head. Means are also disclosed for raising the roller platen upwardly from the print bed after an imprinting operation, the roller platen being lowered to its print position immediately upon its return to the rest position of the head. Means attached to the imprinting head and projecting from the front thereof are also provided for holding the document in place during the imprinting operation.

3,596,597
PRINTING PRESS BLANKET ANCHOR BAR

Roy D. Fountain, 24 Farmcrest Ave., Lexington, Mass.

Division of Ser. No. 672,785, Oct. 4, 1967, abandoned
Filed Aug. 8, 1969, Ser. No. 870,799
No. 870,799
Int. Cl. B41f *27/12*
U.S. Cl. 101—415.1 **4 Claims**

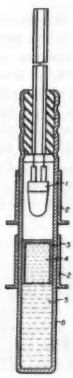


An improved end anchor for a printing press blanket is prepared by forming a bar with a bore or slot and filling the bore or slot with solidified resin around the end of the blanket.

3,596,598
SELF-DESTROYING BLASTING CAP

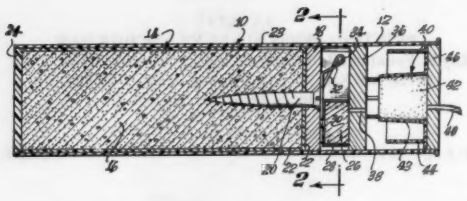
Josef Prior, and Gottfried Prasnik, both of Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Nov. 18, 1968, Ser. No. 776,382
Claims priority, application Germany, Dec. 1, 1967, P 16 46 347.1
Int. Cl. F42b *3/12*
U.S. Cl. 102—28 M **5 Claims**



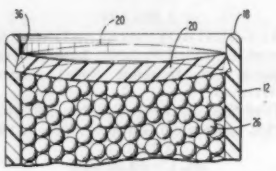
Blasting cap for use in underwater blasting (seismic) exploration having a magnesium or magnesium base alloy casing decomposable in water. A preferred embodiment provides a second metal, having higher electrical potential than the magnesium casing, in strips or bands around the casing. The casing of this invention decomposes in a predetermined immersion time in water whereupon rendering the blasting cap undetonatable.

3,596,599
PYROTECHNIC ASSEMBLY
George H. Schillreff, Glendora, Calif., assignor to General Dynamics Corporation, Pomona, Calif.
Filed Dec. 9, 1968, Ser. No. 782,082
Int. Cl. G06d 1/04
U.S. Cl. 102—37.4 9 Claims



A pyrotechnic assembly including a safety device to prevent the ignition of the main pyrotechnic load until the load has been completely expelled from an associated launch tube. The safety device is biased to operate only upon the explosive launch of the load from the launch tube.

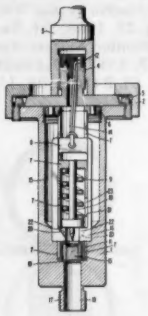
3,596,600
SHOTGUN SHELL
Jesse R. Himmelsbach, Jr., P.O. Box 6, Baker, Oreg.
Filed Nov. 26, 1968, Ser. No. 778,947
Int. Cl. F42b 7/06, 7/08
U.S. Cl. 102—42 10 Claims



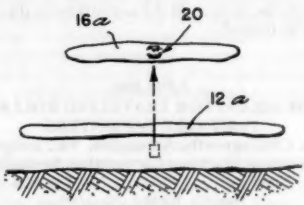
A shotgun shell having a plastic wad secured in an annular groove formed around the inner periphery of the shell case adjacent its open mouth to receive and retain the plastic wad. The wad is a concave-convex, or dome-shaped disc having an outer periphery of a size to closely fit within the open mouth of the shell case to radially align the peripheral edge of the wad with the groove. The wad is initially positioned into the open mouth of the shell case with the convex surface toward the open end of the case, then the wad is oil-canned, or snapped over center to expand the peripheral edge portion of the wad into the groove to seal and retain the wad in the shell case.

3,596,601
COLLAPSIBLE DETONATING DEVICE FOR MINES
Heinrich Kolf, Troisdorf, Germany, assignor to Dynamit Nobel Aktiengeseilschaft, Troisdorf, Germany
Filed Jan. 3, 1969, Ser. No. 788,762
Int. Cl. F42c 7/02, 15/14, 15/18
U.S. Cl. 102—70 S 9 Claims

Pressure from an external force near the detonating device will collapse or move a triggering rod to thus rock an attached wobbler plate, which rocking will lift a U-shaped clamping claw that will pull a firing pin against the bias of a spring away from a primer to a position where the clamping claw automatically releases the firing pin so that it will move under the bias of the thus tensioned spring to strike and detonate the primer. In the normal position, the clamping claw prevents movement of the firing pin into the primer and the spring is not biased or biased only to a small degree. The wobbler plate has a clamped peripheral weakened sealing portion that breaks when the wobbler plate is subjected to a force above a predetermined magnitude.

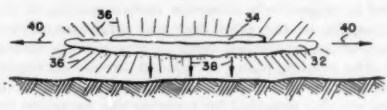


3,596,602
DISTRIBUTED EXPLOSIVES AGENT DISPERSAL SYSTEM
William A. Gey, and Armin T. Wiebke, both of China Lake, Calif.
Filed Sept. 12, 1966, Ser. No. 578,894
Int. Cl. F42b 11/24, 15/30, 25/14
U.S. Cl. 102—90 1 Claim



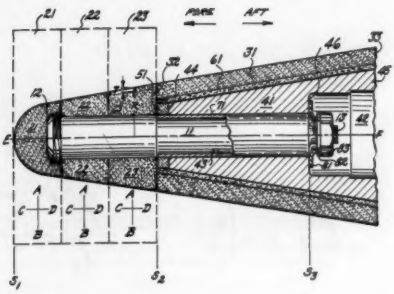
This invention relates to biological and chemical (BW/CW) warfare and more particularly to improvements in dispensing the BW/CW agent.

3,596,603
METHOD OF DISPERSING BW/CW OR OTHER MATERIALS
Harold J. Gryting; Lewis A. Stevens, China Lake, and Robert C. Robbins, Menlo Park, all of, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Sept. 12, 1966, Ser. No. 578,922
Int. Cl. F42b 15/30, 25/12
U.S. Cl. 102—90 2 Claims



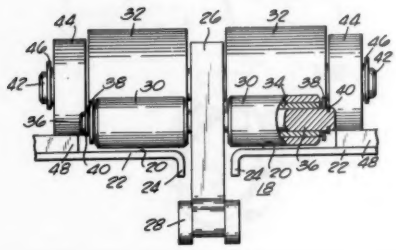
A method and apparatus for forming a flat cloud of BW/CW agent and simultaneously a superposed flat cloud of fuel air. The fuel air cloud is then detonated.

3,596,604
PYROLYTIC GRAPHITE NOSE TIP FOR HYPERVELOCITY CONICAL REENTRY VEHICLES
Raymond G. Corkery, Redlands, Calif., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Feb. 19, 1969, Ser. No. 800,648
Int. Cl. F42b *15/00*
U.S. Cl. 102—105 **4 Claims**



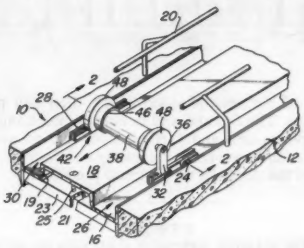
A pyrolytic graphite nose cone tip for hypervelocity conical reentry vehicles in which thermal strain compatibility is achieved longitudinally, radially, and through the load paths of the nose cone tip, by positioning adjoining plates of pyrolytic graphite of varying composition, of varying number, and of varying thickness, along the most forward portion of the nose cone tip; orienting the plates so that they are less thermally conductive in the longitudinal direction (i.e. forward) than they are radially; and, contouring the plates to conform to the desired nose cone tip external configuration.

3,596,605
CONVEYOR MECHANISM
Richard J. Shelstad, P. O. Box 35, Butler, Wis.
Filed Oct. 24, 1968, Ser. No. 770,327
Int. Cl. B65g *19/24*
U.S. Cl. 104—172 **4 Claims**



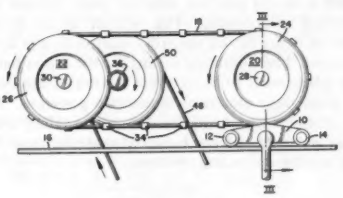
A conveyor mechanism for moving a car through an automatic car wash comprising a plurality of spaced drive unit assemblies fastened to a drive chain. Each drive unit is comprised of a trolley frame having a small set of front rollers and a larger set of rear rollers mounted thereon. Both sets of front and rear rollers engage the tire of the car and cause it to roll along a predetermined path. A third set of support rollers are mounted on the trolley frame outboard of said front and rear tire engaging rollers. The support rollers roll on bearing strips positioned along the conveyor path and serve to stabilize the load exerted on the drive unit assembly by the car tire during the conveying operation.

3,596,606
VEHICLE CONVEYOR
Courtland N. Smith, Jr., Glen Ridge, and Edward L. Verhagen, Rahway, both of, N.J., assignors to Sherman Car Wash Equipment Co., Palmyra, N.J.
Filed Nov. 12, 1968, Ser. No. 774,748
Int. Cl. B65g *17/38*
U.S. Cl. 104—172 **5 Claims**



A vehicle conveyor is provided which includes pusher assemblies for contact with the tires of a vehicle. The pusher assemblies are supported by a shaft having wheels in rolling contact with a track. Wheel flanges are provided on the pusher assemblies to prevent lateral shifting with respect to the track. The pusher assemblies may be removably coupled to their conveyor chain with a quick release mechanism.

3,596,607
CABLE DRIVE DEVICE FOR AN ENDLESS CABLE INSTALLATION
Jean Pomagalski, 114 Avenue de l'Eygala, 38 La Tronche, France
Filed Aug. 9, 1968, Ser. No. 751,505
Claims priority, application France, Aug. 11, 1967, 117,847
Int. Cl. B61b *9/00*
U.S. Cl. 104—178 **6 Claims**

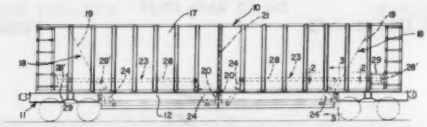


This disclosure concerns a device for driving a carriage along a rail by means of an endless aerial cable. The cable has a plurality of stops mounted thereon and is stretched between two pulleys, each having a pneumatic outer surface. The first pneumatic surface engages the carriage to synchronize the speed of the carriage with the endless cable.

3,596,608
HOPPER DOOR ACTUATING MECHANISM
Herman A. Aquino, Hobart; Ernest J. Nagy, Munster, and William R. Shaver, Munster, all of, Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed Nov. 20, 1968, Ser. No. 777,430
Int. Cl. B61d *7/02, 7/18, 7/21*
U.S. Cl. 105—251 **22 Claims**

This invention relates to a vehicle discharge arrangement for hoppers which may be carried by a railway car or other type of vehicle. Bottom doors are pivoted about a generally horizontal axis to open lowered and closed raised positions and are provided at their lower ends with edge portions positioned in overlapping closed positions. One door is operated by a transversely extending arm which in turn is moved by means of a vertical lever pivoted on a supporting sill extending longitudinally of the vehicle. The other door is intercon-

nected to move with the first door by means of a linkage and bellcrank mechanism which permits the first door to move initially out of the closed position before any substantial movement of the second door occurs. In a partially opened position the overlapping edge portion of the first door is out



of the way of the second door which then can pivot to its open position. The linkage and bellcrank mechanism, as well as the transverse arm and vertical lever means, are arranged to be positioned in overcenter locking configurations to positively secure the doors in their closed positions.

3,596,609

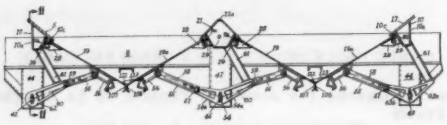
RAPID DISCHARGE HOPPER CAR DOOR ACTUATOR

Robert C. Ortner, Cincinnati, and Norman S. Adams, Maderia, both of, Ohio, assignors to Ortner Freight Car Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 546,722, May 2, 1966, now abandoned. This application Aug. 13, 1969, Ser. No. 857,269

Int. Cl. B61d *7/18, 7/22, 7/28*

U.S. Cl. 105—240 **29 Claims**



Door-actuating means for use in a hopper car of the type having a plurality of hopper doors arranged in opposing pairs and swingable between a downwardly depending open position and a closed position wherein their bottom edges meet in abutting relationship. The hopper doors have portions capable of being flexed inwardly relative to the normal plane of the door. The operating means for the doors being capable of fine adjustment so as to effect flexure of the doors as they swing from their closed to their open positions. The bottom edges of the doors are provided with sealing means which will not obstruct the discharge of material from the hopper car during the unloading process.

3,596,610

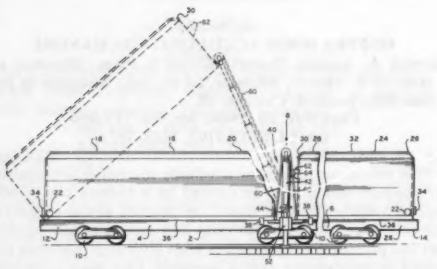
COMPOSITE TILTING BODIED RAILWAY CAR

William A. Keene, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 27, 1969, Ser. No. 837,127

Int. Cl. B61d *5/02;* **B61d** *9/02;* **B61d** *9/10*

U.S. Cl. 105—261 A **2 Claims**



A composite tilting bodied railway car comprising two tanks that are constructed to be independently elevated to an inclined position by a single hydraulic unit for injection and discharge of material thereinto and therefrom.

3,596,611

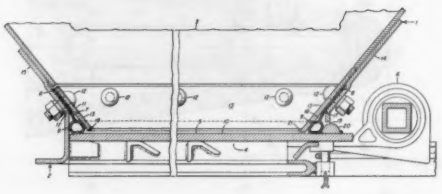
RESILIENT GASKET-SEALING DISCHARGE GATE ASSEMBLY

Walter L. Floehr, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 4, 1968, Ser. No. 772,935

Int. Cl. B61d *7/20, 7/22, 7/24*

U.S. Cl. 105—282 A **9 Claims**



A railway hopper car discharge gate assembly rendered self-sealing by a resilient gasket clamped to the gate frame and engaging an upper surface of the gate in the latter's closed position, a section of the gasket overlying a gate-receiving opening in the frame and constantly engaging the gate being prevented from pinching on movement of the gate by being backed only when the gate is closed, by a member carried by the gate.

3,596,612

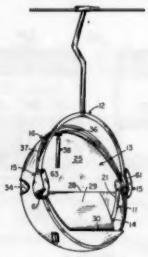
SUSPENDED SPHEROIDAL CAR

Tony R. Sowder, East 814 Grave Ave., Spokane, Wash.

Filed June 2, 1969, Ser. No. 829,209

Int. Cl. A47c *7/66;* **B61b** *7/08;* **B61d** *19/00*

U.S. Cl. 105—329 S **8 Claims**

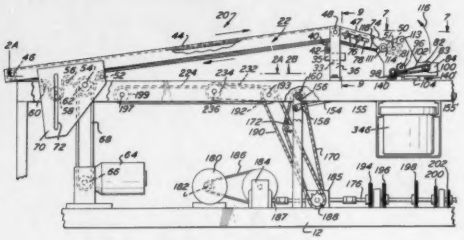


A compound aerial tram chair cover formed with one smaller shell and a second larger shell pivotable about a horizontal axis to extend over the smaller shell in opening. The pivotable mounting of the cover provides shock absorption upon extreme pivotable motion and from an offcenter position biases the movable shell to either closed or open positions. Means are provided to maintain the cover partially open to allow comfortable extension of a user's legs. The cover provides a small reactive surface to wind pressure while providing a large contained volume for user comfort, and allows loading during carrier motion.

3,596,613
AUTOMATIC MACHINE FOR CUTTING AND DEPOSITING DOUGH INTO PANS

Ernest J. Roth, Ridgewood, N.J., and Frank D. Chipchase, New York, N.Y., assignors to International Multifoods Corporation, Minneapolis, Minn.

Filed Nov. 29, 1968, Ser. No. 779,691
Int. Cl. A21c *5/00*
U.S. Cl. 107—4 **23 Claims**

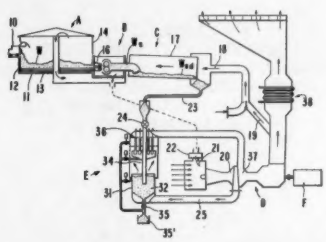


Raw dough is formed in a sheet. The sheet may be cut and separated into webs and curled into rolls. Alternatively, the single sheet may be fed to the automatic machine. The rolls are simultaneously cut into gobs which fall into pans. Alternatively, the sheet is cut into distinct single gobs one of which falls into each pan. The pans are moved in synchronization along a conveyor with the action of the cutting blades so that a row of gobs or a single cut sheet is provided in each pan. The pans are automatically dispensed from a hopper and moved into position wherein they will receive the cut raw dough.

3,596,614
FLUID BED REACTOR MATERIAL COMBUSTION APPARATUS

Richard S. Smith, Palo Alto; Dale A. Furlong, Sunnyvale, and Ronald D. Kinsey, Cupertino, all of, Calif., assignors to Combustion Power Company, Inc., Palo Alto, Calif.

Filed Aug. 30, 1968, Ser. No. 756,593
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 P **2 Claims**



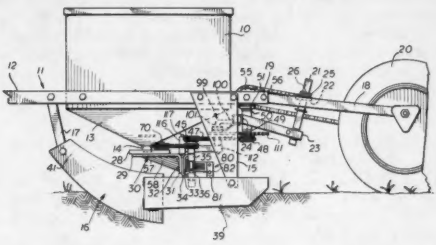
A material combustion method and apparatus is disclosed wherein material to be combusted is directed into a fluid bed reactor, compressed air directed through the fluid bed and entrained particles removed from combustion gases evolved during combustion.

3,596,615
SEED METERING DEVICE

Raymond C. Fisher, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Oct. 1, 1968, Ser. No. 764,131
Int. Cl. A01c *7/18*
U.S. Cl. 111—76 **6 Claims**

A high capacity seed metering device is provided which also has high tolerance to seed size and shape, wherein the seed is fed to a relatively stationary plate separate from the hopper and having openings communicating with a plurality of inclined chutes through which the seed passes on the way to the furrow. Bridging of the seed at the openings is

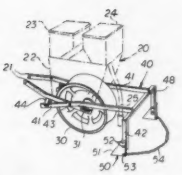


prevented and advance thereof through the chutes or passage is accomplished by vibrating the plate and the chutes.

3,596,616
SOIL MULCHING DEVICE

Jack L. Bauman, Naperville, and John F. Reynolds, Downers Grove, both of, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Oct. 21, 1968, Ser. No. 769,284
Int. Cl. A01c *5/08*
U.S. Cl. 111—80 **2 Claims**

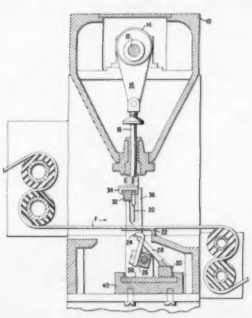


A soil tilling and mulching device including a soil penetrating tool with a chain attached to it in such a manner as to form a catenary and be drawn under the surface of the soil to dislodge undesirable vegetation, produce a surface mulch and to mix surface deposited chemicals into the soil.

3,596,617
SPLIT GAUGE TUFTING MACHINE

Charles William Watkins, Hixson, Tenn., assignor to The Singer Company, New York, N.Y.

Filed Apr. 3, 1969, Ser. No. 813,131
Int. Cl. D05c *15/30*
U.S. Cl. 112—79 R **5 Claims**



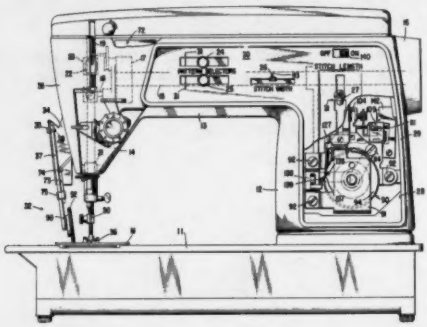
This disclosure relates to a novel and improved tufting machine for producing relatively dense pile fabrics with standard gauge parts and wherein desired pattern effects can be obtained. The advantages of the invention are generally obtained by initiating relative movement between the gauge parts such as the needle, looper and cutting knife, and the backing fabric and needle plate. In accordance with the invention, the gauge parts are such that they always remain in

registry during relative movement thereof. By this means, the gauge parts may be shifted distances lesser than the actual gauge of the parts so that rows of tufts may be produced which are spaced more closely than the gauge of the parts themselves. It will be seen, therefore, from the following specification that relatively dense pile fabrics can be produced without requiring relatively fine gauge parts with their inherent problems of operation.

3,596,618
AUTOMATIC BUTTONHOLE MECHANISMS FOR ZIGZAG SEWING MACHINES

Henry T. Goldbach, Little Ferry; James V. Molnar, Parsippany; Robert C. Hauf, West Paterson, and Robert W. Graft, Somerville, all of, N.J., assignors to The Singer Company, New York, N.Y.

Filed Apr. 17, 1970, Ser. No. 29,622
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 **5 Claims**

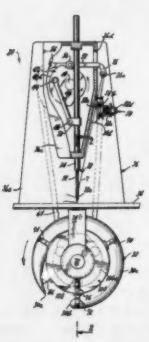


A buttonhole mechanism having a wheel, which rests upon the material being sewn so that the wheel turns as the material is being fed, to provide sensing pulses at preset intervals which control electromechanisms for proper operation of a compact buttonholing assembly of a household zigzag sewing machine. When an operator sets a single-switching device, the buttonholing assembly is coupled to all of the sewing machine controls requiring variation during the stitching of the buttonhole.

3,596,619
LOCK STITCH SEWING MACHINE HAVING CRESCENT-SHAPED BOBBIN

Ragnar William Winberg, 115 W. Elder Ave., Floral Park, N.Y.; Robert W. Winberg, 19 York Place, Williston Park, N.Y., and Paul N. Winberg, 247 8th St., Troy, N.Y.

Filed Apr. 12, 1966, Ser. No. 542,005
Int. Cl. D05b *57/14*
U.S. Cl. 112—181 **8 Claims**



A sewing machine having a crescent-shaped bobbin case which receives a supply of bobbin thread which cooperates with a needle movable through a stitch-forming cycle and receiving a needle thread which provides a lock stitch sewing machine having an exceptionally large capacity bobbin.

3,596,620
ROTARY LOOPTAKER FOR LOCKSTITCH SEWING MACHINES

Willi Vogel, Karlsruhe-Durlach, Germany, assignor to G. M. Pfaff AG, Kaiserslautern, Pfalz, Germany

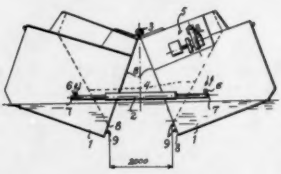
Filed Jan. 2, 1970, Ser. No. 208
Claims priority, application Germany, Mar. 7, 1969, P 19 11 562.9
Int. Cl. D05b *57/14*
U.S. Cl. 112—228 **8 Claims**

In a rotary looptaker for lockstitch sewing machines of the type comprising a rotating cup-shaped looptaker body having a circular raceway engaged by the bearing rib of a stationary bobbin case, said raceway being formed by a shoulder on the inside edge of the cylindrical sidewall of said body and a ring-shaped cove overlying the recess formed by said shoulder, the looptaker body is subdivided into a plurality of segments by slits extending from a reinforced central bottom portion thereof radially outwardly and along the cylindrical wall in a direction parallel to the looptaker axis. The segments with their shoulders forming part of the raceway are elastically connected and the cover forming the remaining part of the raceway is rigidly connected with the central bottom portion of the looptaker body.

3,596,621
LONGITUDINALLY SPLIT AND HINGED BARGE

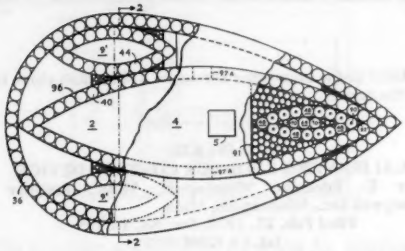
Kjell Werenskiold, Bekkestua near Oslo, Norway, assignor to Ingenior F. Selmer A/S, Oslo, Norway

Filed Mar. 5, 1969, Ser. No. 804,502
Int. Cl. B63b *35/30*
U.S. Cl. 114—29 **3 Claims**



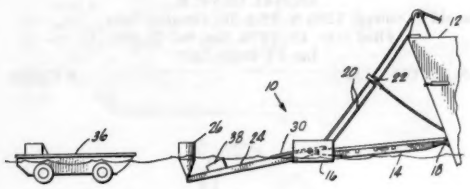
This invention relates to an improvement in longitudinally split barges where the edges of the hopper of the barge with sealing means are pressed together on closing the barge. Said sealing means consisting of at least one projecting web on one barge half and at least two projecting webs on the second barge half (i.e. the edges of the hopper), the said webs interacting and thus form a labyrinth seal and a shearing force resistant element between the two barge halves.

3,596,622
LIGHT-WEIGHT WRECK-RESISTANT VEHICLE
Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss.
Filed Jan. 27, 1969, Ser. No. 794,092
Int. Cl. B63b *43/10, 35/00*
U.S. Cl. 114—69 **35 Claims**



A vehicle, especially adapted for marine use, having strong, lightweight walls, comprising gas-containing thin-metal, cylindrical or corrugated cans, between skins, and surrounded by foamed plastic. These receptacles are: sealed pipes or tubes; or rows of aligned short cans, end-to-end glued together. The skins may be: metal sheets, epoxy-glued or brazed to the cans; or metallic mesh attached to the cans by brazing or glue and/or bolts, coated with stucco. Optionally the rows comprise short cans of slightly different diameters, with the smaller cans nested and glued within rims of the larger cans; and skin-holding bolts are between opposite smaller cans in adjacent pairs of the rows. Sheet rubber is glued to the outer skin of stucco or metal.

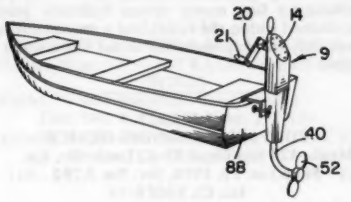
3,596,623
DOUBLE-HINGED FLOTATION RAMP
Ernst G. Frankel, Los Angeles, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed May 31, 1967, Ser. No. 642,512
Int. Cl. B63b *35/44*
U.S. Cl. 114—43.5 **11 Claims**



An apparatus for coupling a small floating object such as a ship to another larger object or ship where the component of motion in the vertical direction of the portion of the apparatus contacted by the small ship is maintained substantially synchronous with the component of motion in the vertical direction of the small ship.

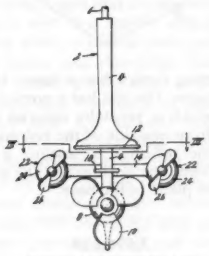
3,596,624
PROPELLING AND STEERING MEANS FOR BOATS
Willard E. Lay, 1810 N. Monitor Ave., Chicago, Ill.
Filed Mar. 13, 1970, Ser. No. 19,250
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 **10 Claims**

A manually operated propelling and steering means for boats comprising, a rotatable hand operated member which when rotated will through gears rotate a flexible shaft, a propeller for propelling the boat, and including a tubular



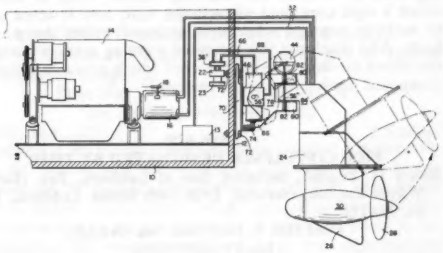
housing surrounding the flexible shaft which is rotated manually to position the propeller to steer the boat.

3,596,625
TROLLING ATTACHMENT FOR OUTBOARD MOTORS
Manfred H. Guenther, 610 E. 151st Terrace, Grandview, Mo.
Filed Feb. 24, 1969, Ser. No. 801,691
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 A **3 Claims**



A trolling attachment for an outboard motor having a vertical column with an engine at the upper end thereof adapted to drive a horizontal screw at the lower end thereof, the boat being steerable by turning said column about a vertical axis, said attachment consisting of a crossarm fixable to or integral with said column, said crossarm carrying an electric motor at each end thereof each adapted to drive a small propeller, said propellers being disposed respectively at laterally opposite sides of the main screw, and means for operating said motors either separately or concurrently.

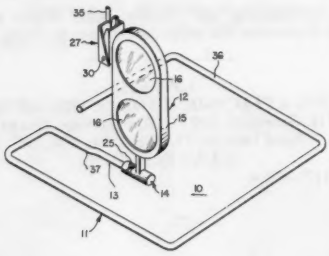
3,596,626
STEERING AND TILTING SYSTEMS FOR MARINE VESSELS
Curt Buddrus, 2522 Hayes St., Muskogee, Okla.
Filed May 22, 1969, Ser. No. 826,913
Int. Cl. B63h *25/42, 5/12*
U.S. Cl. 115—35 **7 Claims**



Steering and tilting systems featuring hydraulic actuators. The steering system comprises two self-contained units in-

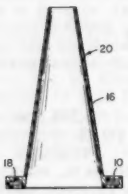
cluding a first helm pressure generating assembly positioned as desired within the vessel and a second hydraulic rotary actuator assembly suitably mounted to the vessel guidance system. The tilting system also comprises two self-contained units including a first motor driven hydraulic pump positioned as desired within the vessel and a second hydraulic actuator assembly suitably mounted to the underwater propulsion system.

3,596,627
PORTABLE WARNING DEVICE
Carl E. Monk, 428 Southland Blvd., Louisville, Ky.
Filed Jan. 19, 1970, Ser. No. 3,752
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P **10 Claims**



A portable warning device has a heavy base of steel rod formed into a polygon. The rod has a portion, extending into the polygon, to which is pivotally secured a reflector. The portion is spaced from one side of the polygon a distance sufficient to allow the reflector to assume a stored position wherein it lies between the portion and the polygon side substantially within the plane of the base.

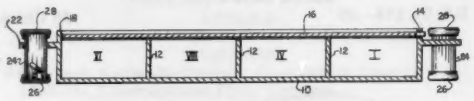
3,596,628
WARNING MARKER
Allen C. Wright, Moraga, Calif., assignor to Utility Products Inc., Oakland, Calif.
Substitute for application Ser. No. 599,427, Dec. 6, 1966.
This application Mar. 23, 1970, Ser. No. 11,304
Int. Cl. E01f *9/00*
U.S. Cl. 116—63 P **1 Claim**



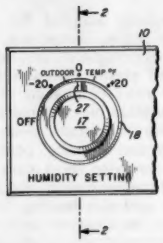
Disclosed herein is a method of making a weighted warning marker wherein the warning marker body is formed about a rigid core, and wherein the rigid core is acted upon to make it nonrigid while it is enclosed within the marker body. Also disclosed is a weighted warning marker made by the above method wherein the core which acts as a weight is composed partly of magnetic material.

3,596,629
PILL CONTAINER DESIGNATED BY TIME
Henry H. English, deceased, late of Lubbock, Tex. (Bennie Wayne English, executor, 2320 54th Street, Lubbock, Texas, 79412)
Filed Oct. 1, 1969, Ser. No. 862,826
Int. Cl. G09f *9/00*
U.S. Cl. 116—121 **24 Claims**

Twenty-nine individual pill bottles or containers are attached to a carrier. The individual containers are grouped, there being one emergency container and a group of four containers for each of the seven days of the week. The containers for each day have caps of a distinctive color, which is correlated to the hour color shown on a simulated clock face upon the carrier.

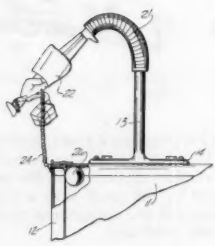


3,596,630
CALIBRATING KNOB FOR CONTROL DEVICE
Walter E. Edelman, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 27, 1970, Ser. No. 14,915
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 **6 Claims**



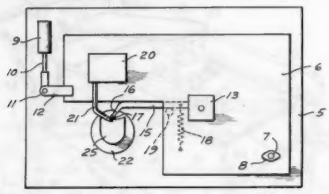
An adjusting knob for a control device, the knob having a pointer that cooperates with a scale on the instrument cover in normal use. If recalibration is desired, the cover is removed to expose indicia on the dial carried by the knob with which the pointer also cooperates. The pointer has a slip friction mounting on the knob to permit its adjustment to a selected one of the indicia on the dial.

3,596,631
SIGNAL DEVICE
Donald F. Sutton, 1206 N. 95th St., Omaha, Nebr.
Filed Mar. 19, 1970, Ser. No. 21,006
Int. Cl. G08c *5/00*
U.S. Cl. 116—132 **8 Claims**



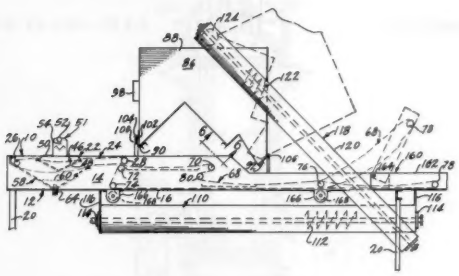
A signal device to be mounted on top of a mailbox, the device comprising base means, biasing means, a signal element, linkage means, and an anchor; whereby when the lid is opened, the preplaced anchor is released allowing the depressed signal element to spring to an upright position, thus indicating to a distant observer that the mailbox has been opened.

3,596,632
ADHESIVE APPLICATOR
Gordon Gauvin; Arnold Jaffe, and Albert Warner Armstrong, all of Amsterdam, N.Y., assignors to Fownes Brothers & Co, Incorporated, New York, N.Y.
Filed Dec. 31, 1968, Ser. No. 788,133
Int. Cl. B05c *11/00, 5/00*
U.S. Cl. 118—8 **3 Claims**



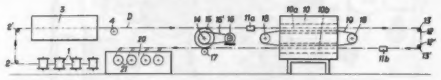
This invention is directed to a machine for automatically applying a continuous stripe of adhesive to one face of an irregularly shaped object, such as a shoe heel or sole, in which the adhesive stripe is located uniformly at a predetermined distance inwardly from the side edges. The object is releasably secured to a one revolution turntable, and an applicator nozzle is mounted adjacent the exposed surface and is automatically moved toward or away from the geometric center of the exposed face of the object in accordance with changes in the edge contours thereof as the object is being rotated. The edges of the object are used to control or direct the movement of the applicator nozzle.

3,596,633
APPARATUS FOR COATING EDIBLE FOOD PARTS
Horace C. Porter, and Marion E. Claytor, both of Gainesville, Ga., assignors to Gainesville Steel Products Company, Gainesville, Ga.
Filed Nov. 30, 1967, Ser. No. 687,012
Int. Cl. A23g *3/20*
U.S. Cl. 118—16 **7 Claims**



A method of coating food parts such as chicken parts, shrimp or potatoes, by moving the parts continuously on a conveyor while dropping a flour breading mixture on one side and then causing the parts to turn over still continuously receiving the breading substance on the other side and recovering the breading substance which has not deposited on the food parts and returning it for reuse. The apparatus comprises a machine with an open mesh conveyor on it continuously driven through a coating pan which receives a liquid flour compound under pressure and into which the edible food parts are dipped as the conveyor moves therethrough and then beneath the breading hopper which is vibrated to gravity feed the bread crumbs onto one side of the coated food parts which are conveyed to a drop-off point at which the parts flip over thereafter passing beneath another breading outlet on the breading hopper receiving bread crumbs on the other side. A screw conveyor on the machine recovers the breading compound which falls unused through the mesh conveyor and returns it to the hopper for reuse. All of the pans and other parts of the machine are removable for cleaning and may be from stainless steel as are the other parts of the machine.

3,596,634
OVEN INSTALLATION FOR USE IN THE MANUFACTURE OF A PLURALITY OF ENAMELED WIRES
August Fuchs, 76 Koerblergasse, Graz, Austria
Filed Dec. 4, 1969, Ser. No. 882,124
Claims priority, application Austria, Dec. 18, 1968, 12335/68
Int. Cl. B05c *11/12*
U.S. Cl. 118—65 **10 Claims**

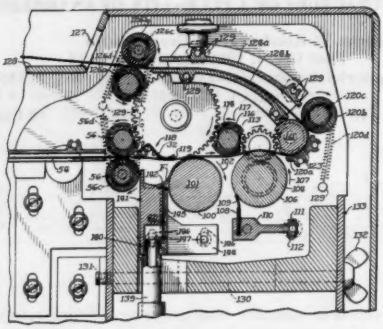


An oven body contains first and second drying retorts. A plurality of wire-handling lines are provided, each of which is operable to move a wire to be enameled in a first direction along a first pass path through first enamel coating means and thereafter through said first drying retort in a first plane, then to move said wire in a second direction, which is opposite to the first, along a second pass path through second enamel coating means and thereafter through said second drying retort in a second plane, which is parallel to said first plane, and to repeat said movement of said wire in said first direction through said first enamel coating means and through said first retort in said first direction in said first plane along at least one additional odd-numbered pass path and through said second coating means and said second retort in said second direction in said second plane along at least one additional even-numbered pass path. Said first and second planes are common to all said wire-handling lines. Each of said wire-handling lines comprises first reversing means for guiding said wire from each odd-numbered pass path to the next succeeding even-numbered pass path, and second reversing means for guiding said wire from each but the last even-numbered pass path to the next succeeding odd-numbered pass path. Said first reversing means comprises first axle means extending in said first plane, a first set of loose pulleys freely rotatably mounted independently of each other on said first axle means, second axle means extending in said second plane, and a second set of pulleys freely rotatably mounted independently of each other on said second axle means. Said second reversing means of each of said wire-handling lines comprise a single multigrooved pulley. Each of said wire-handling lines comprises a variable-speed drive unit and an endless tensile element operatively connecting said drive unit to said multigrooved pulley to drive the same, whereby said multigrooved pulley is operable to pull said wire through said drying retorts. All said multigrooved pulleys are rotatably mounted on a common axle.

3,596,635
ELECTROSTATOGRAPHIC OFFICE COPIER
Louis A. Smitzer, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Mar. 16, 1967, Ser. No. 623,770
Int. Cl. B05b *5/02;* **B05c** *3/02*
U.S. Cl. 118—637 **5 Claims**

Apparatus for electrostatographically copying, particularly with the use of copy sheets coated with a photoconductor wherein the photoconductive surface is charged, exposed to form a latent electrostatic image and developed. In the development zone, a copious supply of developer liquid is engaged against the image-bearing surface in close adjacency to an electrode surface. This is accomplished by applying liquid to the peripheral surface of an electrode in the form of a roller, or by the use of an electrode taking the form of a wick having capillary passages formed therein, or by a stationary

electrode member having an action surface intersected by plural capillary passages. Liquid developer material is thus applied to only the image-bearing surface to render the latent image visible and utilitarian.

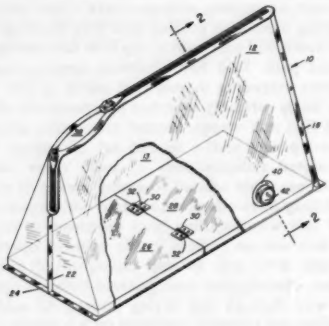


3,596,636

PET DRYING ENCLOSURE

Bette L. Stobaugh, Rte. 2, Box 118, Jennings, Okla.

Filed Dec. 13, 1968, Ser. No. 783,474
Int. Cl. A01k 29/00, 31/08
U.S. Cl. 119—1 2 Claims



A pet drying enclosure is triangularly shaped and includes a substantially rigid floor member, hinged to permit collapsibility to convenient size for storage and travel.

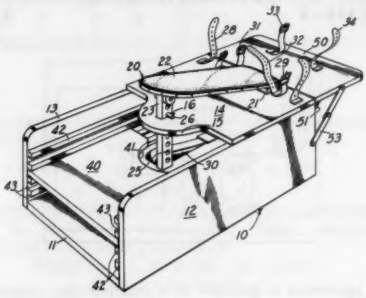
3,596,637

ANIMAL BREEDING AND GROOMING BOX

Esther J. Swafford, Rte 6, Crestland Court, Stone Mountain, Ga.

Filed Oct. 24, 1969, Ser. No. 869,028
Int. Cl. A01k 21/00; A61d 03/00
U.S. Cl. 119—99 7 Claims

This invention relates to an animal breeding and grooming box for use in the care of small domestic animals, such as dogs. More particularly, this invention includes a first animal support means adjustably mounted on a base support structure with means for securing an animal in place on the first support means. A second animal support means is adjustably mounted on the base support structure adjacent one edge and beneath the first animal support means.

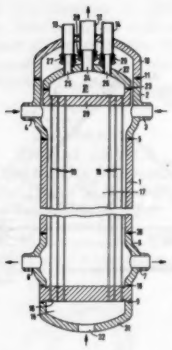


3,596,638

FORCED-FLOW STEAM GENERATOR TO BE HEATED BY PRESSURIZED COOLANT OF A NUCLEAR REACTOR

Rupprecht Michel, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany, Munchen, Germany

Filed Oct. 15, 1968, Ser. No. 767,750
Int. Cl. F22b 1/06
U.S. Cl. 122—32 6 Claims

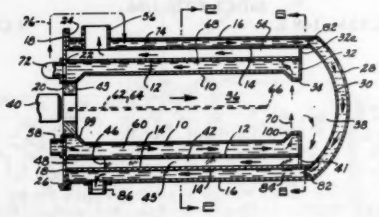


A forced-flow steam generator which is to be heated by pressurized water or other nuclear-reactor pressurized coolant comprises a vertically elongated heat exchanger whose pressure-resistant vessel structure encloses a system of vertically parallel tubes which extend from a plenum chamber at the vessel bottom upwardly to a plenum chamber at the vessel top. The tubes are all straight and have no mixing points between the two plenum chambers. At least one of the two structures that form the respective plenum chambers is movably connected with the wall structure of the heat exchanger vessel to permit a heat-responsive movement. Preferably one of the conduits entering into the vessel to communicate with one of the plenum chambers is joined with an outlet of the chamber by a movable or overlapping joint which is sealed by means of an expansible diaphragm such as a corrugated sealing tube.

3,596,639
TELESCOPING SLEEVE HEATER

Raymond A. Hemmert, Williamsville, N.Y., assignor to American Radiator & Standard Sanitary Corporation, New York, N.Y.

Filed Aug. 11, 1969, Ser. No. 849,036
Int. Cl. F22b *7/12*
U.S. Cl. 122—149 11 Claims

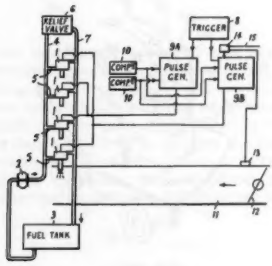


A fluid heater, primarily for water, wherein the hot combustion gases and heat-absorbing fluid flow through separate sinuous passage systems formed by four telescoping sleeves and radially spaced partitions in the annular spaces between adjacent sleeves.

3,596,640
FUEL INJECTION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

George V. Bloomfield, Conventry, England, assignor to Brico Engineering Limited, Conventry, England

Filed Apr. 1, 1969, Ser. No. 811,914
Claims priority, application Great Britain, Apr. 5, 1968, 16640/68
Int. Cl. F02m *5/06*
U.S. Cl. 123—32 EA 17 Claims

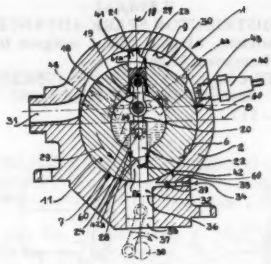


This invention relates to fuel injection systems for internal combustion engines of the kind in which fuel is fed to an engine through one or more electrically operated fuel injection valves or injectors which are opened intermittently. The invention provides means for controlling the injection valve or valves under engine overrun conditions, and also means for controlling the fuel pressure to the injection valves in accordance with the engine induction passage pressure.

3,596,641
INTERNAL-COMBUSTION ENGINE WITH ROTARY PISTON

Josef Hofmann, Krombach, Germany, assignor to ARO Tankanlagenbau GmbH, Nordring, Offenbach am Main, Germany

Filed Jan. 15, 1970, Ser. No. 2,991
Int. Cl. F02b *57/00, 53/00, 55/00*
U.S. Cl. 123—44 D 3 Claims

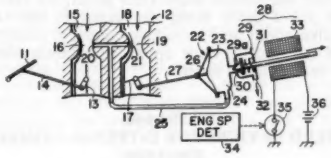


An engine construction in which a casing has circular and oval sections accommodating a rotatable piston guide ring through which pistons radially reciprocate.

3,596,642
CONTROL SYSTEM FOR LIMITING OVERLOAD AND OVERRUNNING OF AN INTERNAL-COMBUSTION ENGINE

Shigefumi Nakata, Aki-gun, Japan, assignor to Toyo Kogyo Co., Ltd., Aki-Gun Hiroshima-Ken, Japan

Filed July 9, 1969, Ser. No. 840,186
Claims priority, application Japan, July 11, 1968, 43/48920
Int. Cl. F02d *11/08;* F02m *13/04;* F02d *9/00*
U.S. Cl. 123—103 6 Claims

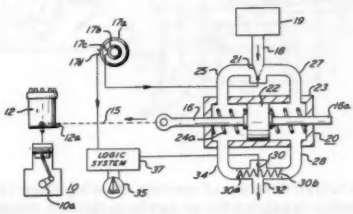


A control system for limiting overload and overrunning of an internal-combustion engine having diaphragm-operated intake sectional area control means from the vacuum of the air intake systems employs a solenoid valve operating when the r.p.m. of the engine or the power thereof exceeds a predetermined limit to terminate operation of the diaphragm.

3,596,643
AUTOMATIC OPTIMUM-POWER-SEEKING CONTROL SYSTEM

Paul H. Schweitzer, State College, Pa., assignor to Optimizer Control Corporation

Filed Aug. 12, 1968, Ser. No. 752,064
Int. Cl. F02p *5/14;* G05b *13/00;* G05d *17/00*
U.S. Cl. 123—117 A 19 Claims



The power output of a power-producing machine may be optimized by continuously varying the fluid pressure applied

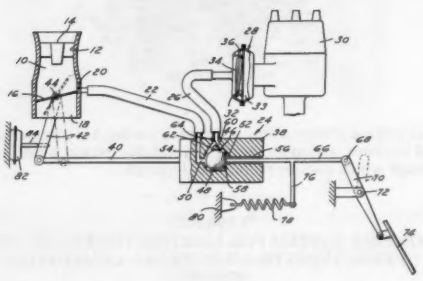
to an actuator which oscillates the setting of an adjustable machine variable about a zero position. The resultant changes of the output power are sensed. Signals are produced which correspond to these changes and to the direction of instantaneous position change of the setting and the fluid pressure is controlled in accordance with these signals in a manner to adjust the zero position about which the setting is being oscillated.

3,596,644

ENGINE DISTRIBUTOR SPARK ADVANCE SYSTEM

Francis P. Hutchins, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 9, 1968, Ser. No. 758,238
Int. Cl. F02p *5/04;* **F02d** *31/00*
U.S. Cl. 123—117 **2 Claims**



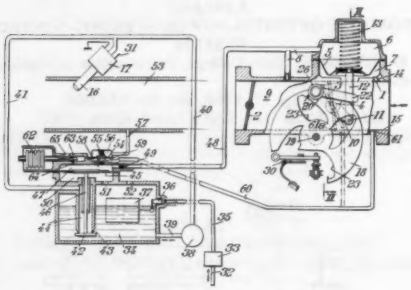
An internal-combustion engine has an ignition spark advance system that includes a valve controlling either a supply of air at atmospheric pressure to the vacuum servo moving the spark advance lever, or subjecting the servo to changing intake manifold vacuum; the valve being connected to and movable with the vehicle accelerator pedal; the valve body in which the valve slides being connected to the carburetor throttle valve; the system including a dashpot permitting slow closing of the throttle valve upon deceleration while simultaneously retarding the spark.

3,596,645

FUEL FEED DEVICES FOR INTERNAL-COMBUSTION ENGINES

Andre Louis Mennesson, Neuilley-sur-seine, France, assignor to Societe Industrielle De Brevets et D'Etudes S.I.B.E., Neuilly-sur-Seine, France

Filed Dec. 9, 1969, Ser. No. 883,401
Claims priority, application France, Dec. 12, 1968, 177918
Int. Cl. F02m *51/02*
U.S. Cl. 123—139 AW **9 Claims**



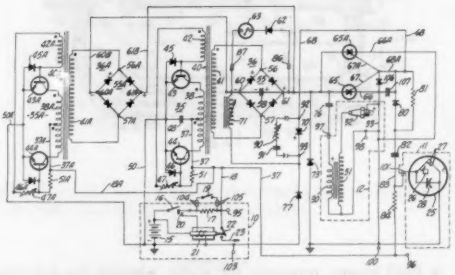
The overall duration of opening of an injection valve in the fuel feed is regulated by an auxiliary throttle member opening automatically arranged upstream of a main throttle member. The pressure of the fuel passing through the injection valve is regulated by a system sensitive to the suction existing in the space between the two throttle members. Correction means act by feeding air into the system so as to reduce the suction and can include a diaphragm-controlled return valve and/or a capsule-driven piston obturating a calibrated orifice to the atmosphere.

3,596,646

CAPACITOR-DISCHARGE ELECTRONIC IGNITION SYSTEM

August C. Weiss, 11658 Harvard Drive, Norwalk, Calif.

Filed Apr. 18, 1969, Ser. No. 817,428
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **2 Claims**



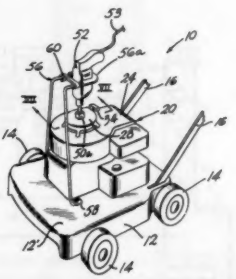
A battery-powered capacitor discharge type of ignition system for a piston engine in which the storage capacitor is charged through a DC-to-DC power converter the output of which is fed to the storage capacitor through an inductance capacitance circuit. A silicon-controlled rectifier means in series with the storage capacitor and a primary ignition coil in a discharge circuit having a diode and capacitor in parallel therein, is triggered by a pulse generated by a circuit powered from the battery and operated in synchronism with the breaker points.

3,596,647

ELECTRIC STARTER MECHANISM FOR SMALL GASOLINE ENGINES

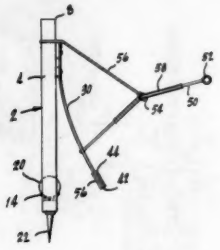
Clarence J. Heisler, R.R. #2, Springport, Mich.

Filed Feb. 3, 1969, Ser. No. 796,094
Int. Cl. F02n *17/00*
U.S. Cl. 123—179 SE **5 Claims**



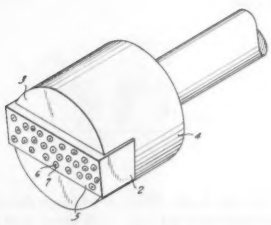
This small engine starting apparatus employs an overriding clutch and a quick disconnect connection for an external electrical power unit; the overriding clutch being engageable, for instance, through the engine crankshaft, flywheel, or alternatively through the power drive to the wheels of a power driven lawn mower or the like; the power unit being safely restrained against reverse torque by attached torque resisting means, and the clutch being coupled, in the deluxe combination, also with a hand pull starter mechanism including a second overriding clutch means in particular relationship to the other overriding clutch in order to enable alternative hand or power starting.

3,596,648
SPRING-TYPE BALL-PROJECTING DEVICE
Russell A. Severs, Jr., 19 E Franklin Ave., Pennington, N.J.
Filed Feb. 7, 1969, Ser. No. 797,535
Int. Cl. F41b *7/00*
U.S. Cl. 124—16 **4 Claims**



A device for projecting a ball or other object in an intended manner for amusement or in a contest. The device has a movable or portable frame provided with an article support and an impact element which is yieldably movable toward a ball or article located on said support to project the ball from the support in a controlled or predetermined manner toward a target or similar objective.

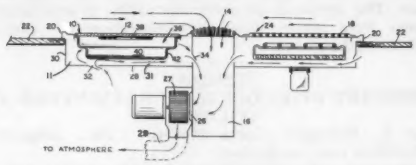
3,596,649
ABRASIVE TOOL AND PROCESS OF MANUFACTURE
Oswald E. Olivieri, Chatham, N.J., assignor to J. K. Smit & Sons, Inc., Murray Hill, N.J.
Filed Apr. 4, 1968, Ser. No. 718,734
Int. Cl. B24b *53/12*; **C04b** *3/16*
U.S. Cl. 125—11 **12 Claims**



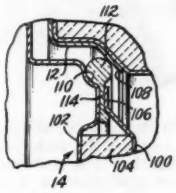
An abrasive tool having improved efficiency and cutting properties which is useful for dressing cutoff, grinding and other abrasive wheels is composed of a tough metallic matrix in which are embedded a number of uniformly dispersed diamonds each encircled by a substantially brittle cermet. The abrasive tool is prepared by coating the diamonds with a ceramic, establishing complete contact between a metal powder and the ceramic-coated diamonds and then hot pressing at a temperature above the sintering temperature of the metal.

3,596,650
VENTILATED COOKING RANGE
Joseph J. Cerola, Indianapolis, Ind., assignor to Jenn-Air Corporation, Indianapolis, Ind.
Filed Jan. 15, 1970, Ser. No. 3,155
Int. Cl. F24c *7/04, 15/10, 15/20*
U.S. Cl. 126—37 R **19 Claims**

This invention relates to a ventilated cooking device having a ceramic panel cooking surface through which cooking heat is transmitted from a heat source underneath. More specifically, the device includes a stove frame or housing having an upwardly facing recess into which is received a heat cartridge having the ceramic panel facing upwardly therefrom for defining a cooking surface. Ventilating apparatus draws cooling air past and in contact with a portion of the heat cartridge for removing heat therefrom to reduce heat transmission to the stove frame and consequently to a kitchen counter in which the frame is adapted to be received.

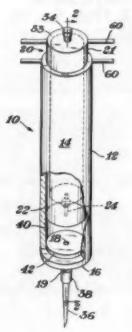


3,596,651
SELF-CLEANING GAS-FIRED OVEN
John A. Welshofer, Cleveland, and Earl T. Rhinehart, Apison, both of, Tenn., assignors to Magic Chef, Inc., Cleveland, Tenn.
Division of Ser. No. 796,756, Feb. 5, 1969, this application Feb. 3, 1970, Ser. No. 12,512
Int. Cl. F24c *15/02*
U.S. Cl. 126—190 **1 Claim**



An oven cavity having an upper broil burner and a lower bake burner both of which are supplied with air from a motor-driven blower and a centrifugal switch disables both burners when the blower stops. A first selector places both burners in operation for cleaning or conditions the apparatus for cooking and a first thermostat cuts the broil burner out when cleaning temperature is approached. A second cooking selector and thermostat selects one of the burners for cooking operation. Hot gases from the oven are discharged into surrounding air after being diluted and cooled by air from the blower.

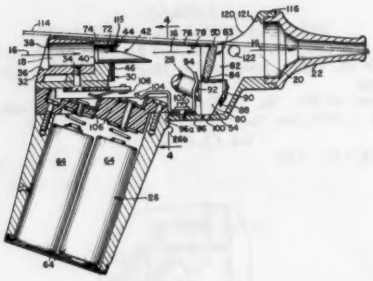
3,596,652
FLUID SEPARATORY DEVICE
James W. Winkelman, Studio City, Calif., assignor to Bio-Science Laboratories, Van Nuys, Calif.
Filed Oct. 14, 1968, Ser. No. 767,374
Int. Cl. A61b *5/10*
U.S. Cl. 128—2 **5 Claims**



The device includes a barrel and plunger assembly for drawing the fluid into a separating chamber, chemical separating means such as an agglutinating agent for separat-

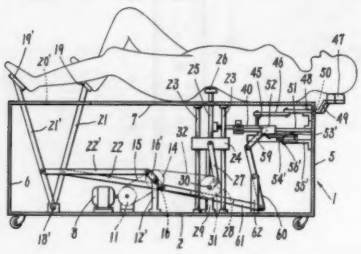
ing the phases in the chamber and means in the plunger assembly including a one-way valve for mechanical separation of the less dense supernatant phase from the more dense phase. The device is of particular utility in separation of plasma from whole blood in preparation for chemical analyses of the plasma.

3,596,653
ENDOSCOPE WITH COINCIDENT ILLUMINATION AND VIEWING
John E. Hotchkiss, Corte Madera, Calif., assignor to Hotchkiss Instruments, Inc.
Continuation-in-part of application Ser. No. 675,811, Oct. 17, 1967. This application Aug. 27, 1968, Ser. No. 755,660
Int. Cl. A61b 1/22
U.S. Cl. 128—9 **16 Claims**



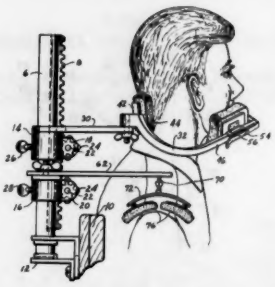
An endoscope for the simultaneous illumination and viewing of an area in a cavity, the endoscope having a housing with a sight passage between a viewing aperture and an aligned, spaced-apart sight aperture. A mirror defining a portion of the sight passage is disposed linearly opposite an electrical light source directing light on the mirror for reflection along the axis of the sight passage, through the sight aperture and onto the area being viewed. A light shield prevents the direct passage of light from the source to the viewing aperture and interior portions of the housing have nonreflecting light-absorbing surfaces to minimize glare at the viewing aperture. A magnifying lens in the sight passage is slanted to eliminate sight-disturbing glare and reflection on its surface, converges the reflected light at a point beyond the sight aperture, and magnifies the image of the area viewed at the viewing aperture. The lens separates the sight aperture from the viewing aperture and the housing includes a sealable opening adjacent the sight aperture and a porthole for connecting air-pumping means with the sight aperture to permit the performance of pneumoscopy. Means can be provided for adjusting the focal point of the reflected light. An electric power source is coupled with the light source via a switch.

3,596,654
MACHINE FOR EXERCISING THE WHOLE BODY
Shichiro Tamura, Tokyo, Japan, assignor to Tensho Electric Industries Co., Ltd., Tokyo, Japan
Filed July 2, 1969, Ser. No. 838,417
Int. Cl. A61h 1/02
U.S. Cl. 128—25 **3 Claims**



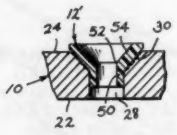
An exercising machine for simultaneously exercising the legs, waist, head and arms of the human body. Various elements are provided for imparting movements to the body members and a motor is provided for driving these elements.

3,596,655
TRACTION CRADLE DEVICE
Joseph D. Corcoran, 66 Greenway Terrace, Forest Hill, N.Y.
Filed Nov. 20, 1968, Ser. No. 777,261
Int. Cl. A61h 1/02
U.S. Cl. 128—75 **3 Claims**



Traction cradle device comprising a standard, formed with a toothed rack and adapted to be secured to the back of a patient's chair, means for applying pressure to a patient's occipital area and to both sides of a patient's jaw area and shoulder-restrainer means for maintaining stability of the shoulders while pressure is being exerted upward on a patient's jaw-occipital area, first adjustable means for securing said occipital and jaw pressure-applying means on said standard and second adjustable means for securing said shoulder-restrainer means on said standard.

3,596,656
FRACTURE FIXATION DEVICE
Bernd B. Kaute, 87 Prinzegenten St., Berlin, 31, Germany
Filed Jan. 21, 1969, Ser. No. 792,449
Int. Cl. A61f 5/04
U.S. Cl. 128—92 **1 Claim**

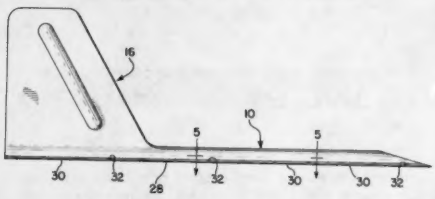


A device for use in the fixation of bone fractures including a metal plate having front and back faces and having at least one bore therethrough with a countersunk portion in the front face of said plate. The backface of said plate is adapted for positioning against the bone. A nonmetallic frustoconical washer is seated in the countersunk portion of the plate bore. A metal pin is inserted through the washer and the plate bore. Said pin has a shank end part which is anchored into the bone and an enlarged head which engages the washer and which serves to hold the plate firmly against the bone.

3,596,657
THERMALLY CONDUCTIVE SURGICAL DRESSING
William Eidus, 2 Essex Lane, Suffern, N.Y.
Filed Feb. 14, 1969, Ser. No. 799,471
Int. Cl. A61l 15/00
U.S. Cl. 128—156 **10 Claims**

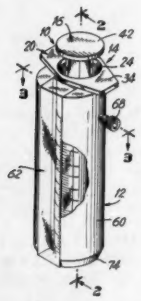
Surgical dressings comprising a combination of conventional cotton gauze materials and thermally conductive elements interwoven or impregnated in the cotton gauze materials to provide a surgical dressing having an adequately high degree of absorbency and excellent thermal conductivity to facilitate cooling or heat treatment to body areas while bandaged.

3,596,658
DETACHABLE GUIDE NEEDLE
Carl W. Lange, Des Plaines, and Frank J. Rychlik, Northbrook, both of, Ill., assignors to Illinois Tool Works, Inc., Chicago, Ill.
Filed May 22, 1969, Ser. No. 826,969
Int. Cl. A61m *05/00*
U.S. Cl. 128—214.4 **4 Claims**



A sheet material element is provided with a plurality of spaced scored portions along a predetermined path and frangible connecting webs are provided between the spaced scored portions. In the illustrated embodiment, detachable guide needle devices are utilized in conjunction with flexible catheters in withdrawing or introducing fluids relative to a body, have features incorporated therein which permit separation of the guide needle into detached sections after use thereof for complete removal from an associated flexible catheter.

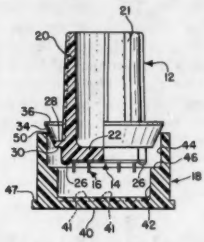
3,596,659
A SHIELDING HOLDER FOR A SYRINGE
Herman Glasser, Nassau County, N.Y., assignor to Nuclear Associates, Inc.
Filed Dec. 9, 1968, Ser. No. 782,311
Int. Cl. A61m *5/00*
U.S. Cl. 128—215 **9 Claims**



Syringe and holder therefor fabricated of high-density material to reduce transmission of energy, either by radiation or particle bombardment, either inwardly or outwardly thereof while yet enabling visual observation of material within the syringe.

3,596,660
INJECTION DEVICE
Robert Richard Melone, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 12, 1969, Ser. No. 823,644
Int. Cl. A61b *17/20;* **A61m** *5/00*
U.S. Cl. 128—253 **3 Claims**

A transcutaneous injector having an integral sealing means for cooperation with a protective cover to facilitate aseptic storage of biological substances. The cup-shaped cover is provided with vent ports for accomplishing a vacuum before the injector is fully positioned within the cover interior. A resilient flange annularly attached to the injector selectively

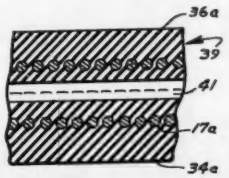


effects a seal with the cover or allows communication of the vent ports to the interior of the cover.

3,596,661
DERMATOLOGICAL COSMETIC PROCESS
Lloyd Motz, New York, N.Y., assignor to Geoscience Instruments Corporation, Mt. Vernon, N.Y.
Filed Nov. 12, 1968, Ser. No. 774,624
Int. Cl. A61b *17/00*
U.S. Cl. 128—355 **4 Claims**

A skin massaging and stimulating method wherein a sheet or mitt is formed of a poromeric, coriaceous material ("corfam") and is useful per se, or in conjunction with cosmetic compositions. The coriaceous material serves to effect massaging and removal of dead skin when moved across the skin.

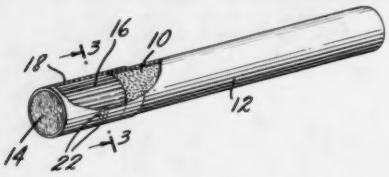
3,596,662
ELECTRODE FOR CARDIAC STIMULATOR
Lee R. Bolduc, Minneapolis, Minn., assignor to Medtronic Inc., Minneapolis, Minn.
Filed Sept. 4, 1968, Ser. No. 757,232
Int. Cl. A61n *1/00*
U.S. Cl. 128—418 **1 Claim**



An electrode having a pair of electrical conductors encapsulated in a unitary, homogeneous body of flexible nonconductive plastic material, such as silicone rubber. The electrical conductors are platinum alloy coil springs having spaced coils. The plastic body surrounds the coils and fills part of or the entire centers of the springs. The process of making the electrode utilizes a three-piece mold comprising a pair of identical female molds and a male mold. The female molds have elongated cavities of a size and shape of one-half of the plastic body covering the conductors. The male mold has elongated ribs which each have a volume equal to one-half of

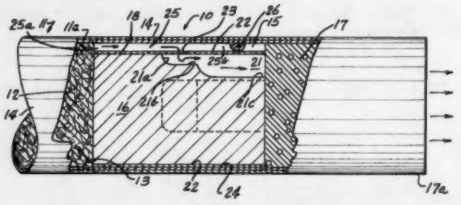
the volume occupied by the conductor coils plus one-half of any volume to be left void. The halves of the bodies are initially made by mounting the male mold in assembled relation with the female mold and injecting plastic into the mold cavity under high pressure. The male mold is then removed from the female mold exposing the grooves in the molded halves of the bodies. The conductors are then placed between the halves of the bodies in alignment with the grooves formed by the ribs of the male mold. The conductors are encapsulated in the body by combining the halves of the body into a one-piece member by simultaneously subjecting the assembled female molds to a high pressure and temperature sufficient to cause the plastic to flow between the coils of the conductors to fill the center portions of the conductors.

3,596,663
VENTILATED SMOKING ARTICLE
Frederick J. Schultz, and Chase W. Lassiter, both of Greensboro, N.C., assignors to Lorillard Corporation, New York, N.Y.
Filed May 29, 1969, Ser. No. 828,835
Int. Cl. A24d *01/04*; **A24f** *13/06*
U.S. Cl. 131—10 A **5 Claims**



The admission of outside air to a tobacco smoke filter is enhanced by providing a corrugated wrapper around the filter plug, thereby to define a multiplicity of passages for conducting air admitted through the tipping paper over a relatively large portion of the surface of the filter plug.

3,596,664
FILTER CIGARETTE
Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Co., Winston-Salem, N.C.
Filed Sept. 22, 1969, Ser. No. 859,969
Int. Cl. A24d *01/04*
U.S. Cl. 131—10.5 **18 Claims**

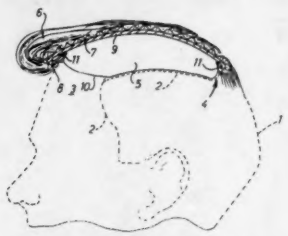


A filter cigarette is provided which includes an elongated tobacco rod and an axially aligned filter assembly affixed to one end thereof. The filter assembly comprises a smoke-impervious core piece, and a smoke-pervious member disposed in abutting relation with respect to the downstream end of the core piece. The core piece is provided with a plurality of elongated facets; each facet being provided with an elongated indentation through which smoke is adapted to flow. The core piece is encompassed by a thin perforated membrane having perforations thereof aligned with the indentations. A sleeve is also provided which encompasses the perforated membrane. Portions of the sleeve and perforated membrane are in spaced relation and form a plurality of elongated longitudinally extending shallow passageways through which smoke is adapted to flow. Each passageway is in communication with an adjacent indentation through a membrane perforation. The smoke is emitted from the membrane perforations at a very high velocity and impinges against an adjacent surface before flowing through the smoke-pervious member.

3,596,665
TOBACCO SMOKE FILTER
Knud Lindgard, 436 Iliwahi Loop, Kailua, Oahu, Hawaii
Filed Mar. 4, 1970, Ser. No. 16,314
Int. Cl. A24d *1/04*; **A24f** *7/04*
U.S. Cl. 131—266 **7 Claims**

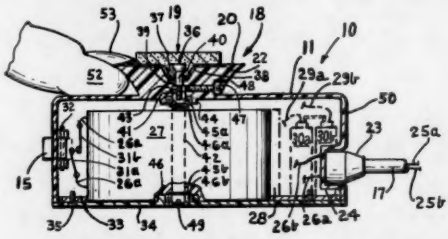
A frangible tobacco smoke filter composed of a resilient tubular casing and a unit consisting of interconnected, opposed seals. When the smoker applies pressure to the casing, the unit is broken thereby allowing for passage of the tobacco smoke through a smoke-treating medium contained within the casing.

3,596,666
HAIRPIECES
Reginald Francis Dooley, 168 Queen Drive, Childwall, Liverpool, 15, England
Filed May 13, 1968, Ser. No. 728,485
Claims priority, application Great Britain, May 19, 1967, 23,276/67
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 **9 Claims**



The invention provides a hairpiece and method of making same in which a plurality of hairs are secured to a base by a chemically setting adhesive of the type which undergoes a chemical reaction in the actual setting process.

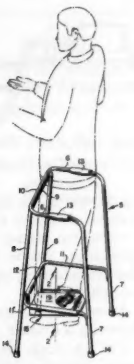
3,596,667
ELECTRICALLY DRIVEN FINGERNAIL TRIMMER
Robert R. Buercklin, deceased, 2424 Chimney Rock, Houston, Tex., and Mrs. Billie E. Keeth, executrix, P.O. Box 187, Portia, Ark.
Filed June 17, 1968, Ser. No. 737,746
Int. Cl. A45d *2905*
U.S. Cl. 132—73.6 **12 Claims**



The housing of the trimmer provides a boss on top with upper surface round or preferably oval in contour, the boss

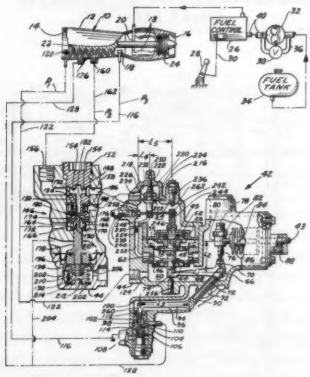
extending arcuately downwardly and inwardly so that the fingertip may extend protectively under its top surface as the fingernail bears against an emery connected to a shaft rotated by a fractional horsepower motor within the trimmer housing. The emery wheel and motor shaft are connected in manner that they are assembled with the trimmer housing against displacement of the shaft in direction of its axis; the preferred contour of the top surface of the boss being preferably elliptical to give the best fingertip protection, as when a long fingernail is to be trimmed.

3,596,668
AMBULATORY DEVICE
Leonard Tosto, 245 Newman Ave., Bronx, N.Y.
Filed Jan. 27, 1970, Ser. No. 6,054
Int. Cl. A61h *3/00*
U.S. Cl. 135—45 A **1 Claim**



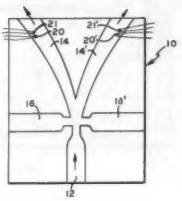
A removable bracket comprising a padded knee or leg support mounted in the open frame structure of an invalid-walker and particularly adapted for use by an amputee, minus the lower or upper extremity of one leg, as a means for making walking easier, safer and faster.

3,596,669
PRESSURE RATIO DEVICE
Julius Alberani, 4785 Curtis, Dearborn, Mich.
Filed July 10, 1969, Ser. No. 840,768
Int. Cl. F16k *31/145*
U.S. Cl. 137—81 **5 Claims**



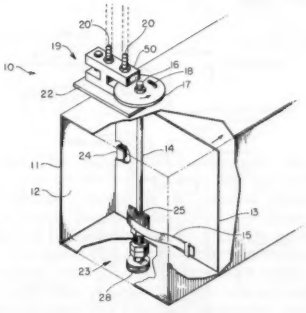
A pressure ratio device having a first pressure-responsive diaphragm exposed at opposite sides to two different control pressures is operatively connected as by cooperating links and levers to a valve member which when actuated to one position produces a first output pressure signal and when actuated to a second position produces a second output pressure signal; a second reset type of pressure-responsive diaphragm is operatively connected to the first diaphragm and at times exposed at opposite sides thereof to the same two different control pressures and at other times exposed at opposite sides thereof to only one of the control pressures; the second reset diaphragm thereby functioning to develop a controlled hysteresis within the overall system thereby requiring a greater force to be exerted on the first diaphragm to move the valve member to the first position as compared to the force exerted on the first diaphragm required to move the valve member to its second position.

3,596,670
FLUIDIC CONTROL DEVICE
Robert O. Fehr, Greenwich, and Augustus H. Fiske, Jr., West Redding, both of, Conn., assignors to Fehr & Fiske, Inc., Westport, Conn.
Filed Oct. 24, 1968, Ser. No. 770,273
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **6 Claims**



In a fluidic control circuit having a main fluid inlet conduit, a pair of main fluid outlet conduits for receiving fluid from said inlet conduit, and a set of control conduits for causing responsive to fluid flow in the latter the main fluid to flow either in one or the other outlet conduit, a thermally responsive electrical-sensing means is provided in each of said outlet conduits to be responsive to the presence or absence of fluid flow. The sensing elements are connected in an electrical circuit which provides a condition responsive signal suitable for control purposes.

3,596,671
FLOW-RESPONSIVE VALVE
James A. Scharfenberger, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.
Filed Apr. 9, 1969, Ser. No. 814,690
Int. Cl. G06d *11/00*; **B05c** *11/00*
U.S. Cl. 137—87 **17 Claims**



A switch includes an orifice connected to a fluid source, which supplies a fluid to the orifice, and an opening spaced from and substantially aligned with the orifice, The opening is connected to a device adapted to be actuated as a result of a fluid flowing from the orifice to the opening. A movable

member is in the path of a gaseous flow and is adapted to respond to the gaseous flow. An apertured, displaceable element is adapted to be displaced by movement of the movable member. The displaceable element is position between the orifice and the opening in an interference path with the fluid flow. Displacement of the displaceable element to a position so that the aperture is substantially aligned with the orifice and the opening allows fluid to flow between the orifice and the opening permitting actuation of the device.

3,596,672

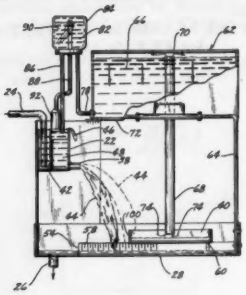
VISCOSITY CONTROL SYSTEM

Mervin R. McBee, 6107 Walnut Hill Drive, Des Moines, Iowa

Filed Mar. 6, 1969, Ser. No. 804,960

Int. Cl. G05d *11/00*

U.S. Cl. 137—92 **7 Claims**



A fluid system including circulation of fluid by gravity in a variable projectory to a second station. The fluid reaching the second station is dependent upon the viscosity of the fluid whereby the lower the viscosity the more fluid will reach the second station. An air inlet pipe extending from the top of a solvent container is positioned in the second fluid station and thus will supply solvent to the first fluid station when insufficient fluid is in the second station to close off the air inlet pipe. The solvent is siphoned to the first fluid station and upon the level of fluid at the first station falling below the end of an air inlet pipe the siphon line will be exposed to air and thus stop the flow of solvent.

3,596,673

AUTOMATIC TRANSFER APPARATUS

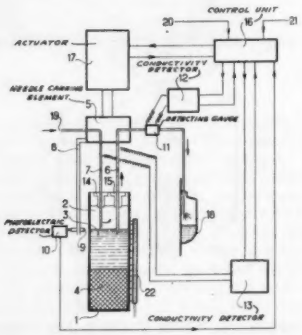
Robert Laucournet, L'Hay-Les-Roses, France, assignor to F. Hoffman-La Roche & Co., Aktiengesellschaft, Basel Switzerland

Filed Jan. 23, 1969, Ser. No. 793,498

Claims priority, application France, Jan. 24, 1968, 137,316

Int. Cl. B67d *5/54*

U.S. Cl. 137—209 **10 Claims**



Automatic device for delivering a calibrated quantity of a liquid from a first receptacle into a second receptacle by positioning a duct into the liquid to be delivered, aspirating the liquid into the duct for delivery into the second receptacle including control means cooperating with detectors of the position of the duct in the liquid and the aspirating duct.

3,596,674

SUBMARINE PIPING SYSTEM FOR TRANSFERRING LIQUIDS

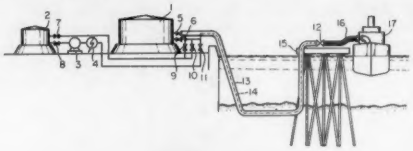
Yoshie Takizawa, Yokohama-shi, and Tatsuhiko Egami, Tokyo, both of, Japan, assignors to Niigata Engineering Co., Ltd., Tokyo and Nihonkai Oil Co., Ltd., Toyama-Ken, Japan

Filed June 4, 1969, Ser. No. 830,293

Claims priority, application Japan, June 13, 1968, Oct. 9, 1968, Oct. 9, 1968, Apr. 18, 1969, 43/49949; 43/88347; 43/88348; 44/35581

Int. Cl. B63b *27/24*; **B67d** *5/00*

U.S. Cl. 137—334 **4 Claims**



When transferring liquid with high-solid point or high viscosity, such as crude oil or heavy fuel oil from a vessel to a shore tank or vice versa by means of a submarine piping system, the liquid remaining inside the pipe solidifies after the completion of the transferring operation and blocks the flow of the liquid through the pipe.

To eliminate this drawback, an inner pipe is provided inside the pipe, thus forming a double pipe. Heated liquid with low solid point is sent through the inner pipe and back through the outer pipe, thereby replacing the liquid inside the inner and outer pipes. This services to preheat the double-pipe construction prior to the liquid transferring operation, thus enabling the transfer of the liquid to be carried out smoothly and economically.

3,596,675

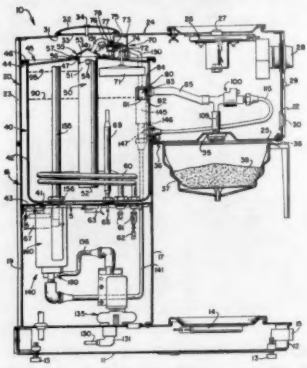
OVERFLOW CONTROL SYSTEM FOR AUTOMATIC BEVERAGE BREWER

Harvey R. Krueger, Carpentersville, and Arthur A. Morgan, Palatine, both of, Ill., assignors to Reynolds Products, Inc., Rolling Meadows, Ill.

Division of Ser. No. 756,592, Aug. 30, 1969, Pat. No. 3,527,172, which is a continuation-in-part of application Ser. No. 708,121, Feb. 26, 1968, now Pat. No. 3,443,508. Divided and this application Dec. 18, 1969, Ser. No. 888,115

Int. Cl. F16k *3/18*

U.S. Cl. 137—389 **8 Claims**



There is disclosed herein an overflow control system for use in an automatic beverage brewer or the like, comprising,

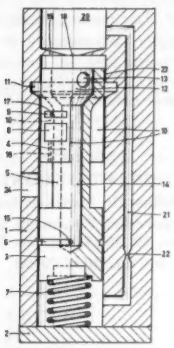
in combination, a tank for holding fluid therein, discharge means associated with the tank for discharging fluid therefrom, fluid inlet means including first valve means for introducing fluid into the tank when the first valve means is in an open position, means for operating the first valve means to the open position, means for operating the first valve means to a closed position after a predetermined quantity of fluid has been introduced into the tank, and magnetically controlled valve means disposed in the fluid inlet means and having a normally open position permitting fluid to flow therethrough and into the tank so long as the first valve means is in the open position and having a closed position preventing the flow of fluid to the tank, the magnetically controlled valve means being operable to the closed position thereof in response to the introduction into the tank of a quantity of fluid in excess of the predetermined quantity, thereby to prevent flooding of the tank.

3,596,676

PRESSURE-REDUCING VALVE

Hillebrand Johannes Josephus Kraakman, Emmasingel, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Sept. 10, 1969, Ser. No. 856,635
Claims priority, application Netherlands, Sept. 18, 1968, 6813307
Int. Cl. G05d *7/01*
U.S. Cl. 137—501 **5 Claims**



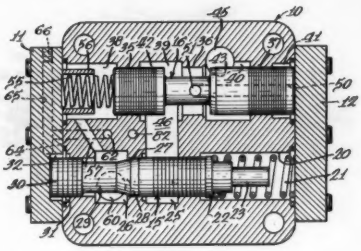
A pressure-reducing valve for obtaining a constant low-pressure flow of high volume of fluid which is supplied to the valve under high pressure. The valve comprises a pair of axially movable pistons connected by a rod within a valve-housing cylinder. The cylinder is closed at one end and a spring acts on free end of the piston assembly for urging the piston away from the closed end. The other end of the cylinder is provided with an outlet port through which the low-pressure fluid is passed from the valve and an inlet port is provided in the sidewall of the cylinder for introducing high pressure fluid to a space between the pistons. The piston assembly is hydrostatically journaled within the cylinder and is provided with a plurality of axially extending slits which vary in passageway size by the relative position of the piston within the cylinder. The high-pressure fluid is passed through the slits to a chamber on the other side of the piston and then through a turbulent-producing orifice to the outlet port.

3,596,677

REMOTELY OPERABLE PRESSURE COMPENSATED FLOW CONTROL VALVE

Richard J. Clark, Racine; John L. Acheson, Franklin, and Lawrence R. Landherr, Racine, all of, Wis., assignors to Rex Chainbelt Inc.

Filed Jan. 13, 1969, Ser. No. 790,803
Int. Cl. F16k *17/22*; **F15b** *11/04*
U.S. Cl. 137—501 **4 Claims**



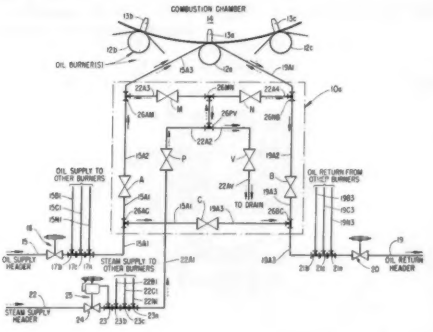
A flow control valve and, more particularly, a pressure compensated flow control valve having a feed spool settable to determine the rate of fluid flow and remote power means for setting the feed spool, more particularly, an electrically operated pilot pressure control unit which can establish a pilot pressure acting on the feed spool and a pressure compensating valve which maintains a nearly constant pressure drop across the feed spool.

3,596,678

VALVE ACTUATOR MANIFOLD FOR A RETURN FLOW OIL BURNER SYSTEM

Nick Kutrubs, Cleveland; Michael Panich, Willoughby; Lino Perossa, Willoughby, and Jack F. Shannon, Euclid, all of, Ohio, assignors to Bailey Meter Company

Filed Feb. 3, 1970, Ser. No. 8,348
Int. Cl. F23d *11/28*; **F16k** *11/00*
U.S. Cl. 137—624.18 **11 Claims**



An apparatus, for lighting-off, maintaining fire on and shutting-down one or more oil burners, having a plurality of valves independently biased in the closed direction and mounted in a base. The plurality of valves form first and second valve banks adapted to be alternatively actuated by a plurality of crank arms locked to a drive shaft which is journaled for rotation through a predetermined angle plus and minus of a reference position. A manual-automatic controller, having a handwheel drive and an electric motor drive for alternative control modes, rotates the drive shaft to open and close the valves. In the automatic mode the electric motor is energized by a logic system to turn the burner on, off or trip, and the motor is deenergized when switches associated with preselected valves indicate that a predetermined position of the valves has been obtained.

3,596,679

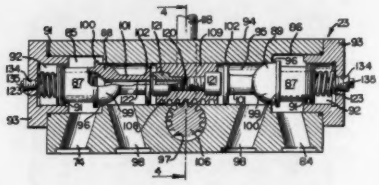
MANUALLY OPERABLE PILOT VALVE

Harry Sugden, Jr., Statesboro, Ga., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 728,295, May 10, 1968, this application July 16, 1969, Ser. No. 871,040

Int. Cl. F16k *11/14*

U.S. Cl. 137—636 **2 Claims**



A manually operable pilot control valve for a fluid motor control system having a four-way fluid pressure responsive valve for determining the direction and rate of flow of the motive fluid in response to the positioning of which includes a piston operated double poppet selectively operable to controllably vent the downstream side of selected inlet chamber and outlet chamber fluid pressure responsive valves to predetermine the direction and rate of flow of the motive fluid to the fluid motor.

3,596,680

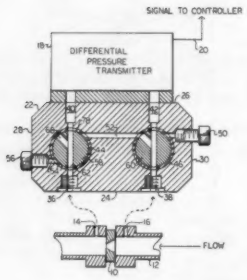
PLUG VALVE MANIFOLD

Donald L. Adams, Rte. 2, Box 25-A, Tulia, Tex.

Filed Feb. 24, 1969, Ser. No. 801,450

Int. Cl. F16k *11/22*

U.S. Cl. 137—637 **10 Claims**



A manifold connection is provided to connect the pressure taps from either side of an orifice to a pressure transmitter. By the use of two valves and two side ports, which are normally capped, it is possible to connect the pressure taps from the line to the transmitter or to interconnect the transmitter connections for zero calibration or to connect the transmitter to the side ports for connection of a calibrating pressure or to connect the pressure taps to the side ports to blow sediment from the lines. The handles are arranged not to interfere with each other except that the valves must be moved to a certain position in sequence or the handles will interfere with each other. The plugs of the valves are tapered at a smaller conical angle than the cavities in the valve body and the lining is feathered at each end for a good seal.

3,596,681

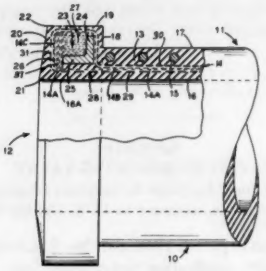
FLANGE FOR HOSES

Arthur M. Elson, Hamilton Township, Mercer County, N.J., assignor to Acme-Hamilton Manufacturing Corporation, Trenton, N.J.

Filed Dec. 12, 1969, Ser. No. 884,414

Int. Cl. F161 *11/12*

U.S. Cl. 138—109 **10 Claims**



A hose construction having reinforced flanged ends which are firmly anchored through fabric of high tensile strength which, in turn, is anchored by a wire helix in the carcass portion of the hose, for coupling successive lengths of hose and forming a high-pressure resistant seal at the mating flanged end portions thereof. The mating pressure supplied by split coupling rings is highly concentrated in the region of the mating surfaces. A "fabric cushion" provided in the region of each mating surface significantly increases the springiness of the flanged end mating surfaces.

3,596,682

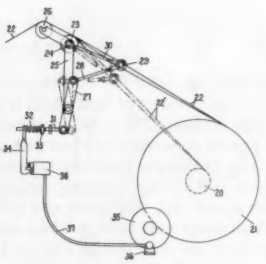
FRICTION LETOFF CONTROL

John H. Nydam, Whitinsville, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1968, Ser. No. 777,306

Int. Cl. D03d *49/08*

U.S. Cl. 139—109 **7 Claims**



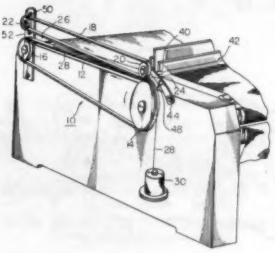
A compensating follower device for a friction-type letoff actuated by variations in the angle at which a web of yarn or other wound material is withdrawn in going from a full to empty beam.

3,596,683

WEFT YARN MEASURING AND DETAINING DEVICE FOR SHUTTLELESS LOOM

Terumitu Dendo, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sept. 18, 1969, Ser. No. 858,965
Claims priority, application Japan, Sept. 21, 1968, Sept. 21, 1968, 43/68383;43/82388
Int. Cl. D03d *47/34*
U.S. Cl. 139—122 R 10 Claims



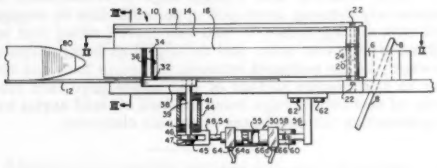
A device for continuously measuring and detaining unit lengths of weft yarn in a shuttleless loom. The device has two conveying belts set at an angle formed by the belt surfaces facing each other and diverging from the common tangential contact line in the drive end where the unit lengths are continuously measured and then detained in the angular space formed between the belt surfaces facing each other.

3,596,684

SHUTTLE CHICK MECHANISMS

William Kenneth Miller, Greeneville, Tenn., assignor to Huyck Corporation, Remsseler, N.Y.

Filed Mar. 18, 1968, Ser. No. 713,807
Int. Cl. D03d *49/56*
U.S. Cl. 139—187 10 Claims



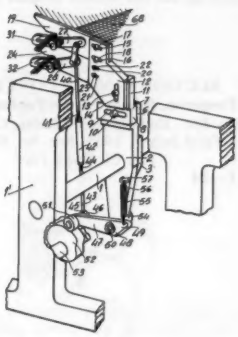
This invention relates to an improved shuttle-checking mechanism for a loom, comprising a shuttle box having a pivotally mounted shuttle binder which forms one wall of the shuttle box and one edge of the opening of the shuttle box. By causing the binder to be pivoted to a closed position prior to the shuttle entering the box, the curved surface of the shuttle will engage a generally arch-shaped surface of the binder and the motion of the shuttle will be uniformly arrested and shuttle rebound substantially eliminated. By causing the binder to be pivoted to an open position prior to the shuttle being picked from the box, contact pressure between the shuttle and the edge of the box opening formed by the binder will be substantially eliminated, making it easier to drive the shuttle from the box and reducing the abrasion on the weft yarn being carried by the shuttle.

3,596,685

DEVICE FOR CUTTING AND RETAINING THE WEFT THREADS IN SHUTTLELESS LOOMS

Jose Bassa Bassart, Calle Bailen 150, Barcelona, Spain

Filed July 3, 1969, Ser. No. 838,753
Claims priority, application Spain, July 6, 1968, 356168
Int. Cl. D03d *47/34, 45/50*
U.S. Cl. 139—302 6 Claims



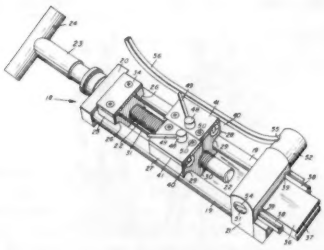
Device for cutting and holding weft threads in a shuttleless loom comprising two forklike plates, each with a groove for holding the weft thread, each groove having a lower edge defined by a cutting edge, two lever blades applied in articulation to said two plates and which present one of their ends bent in the shape of a hook, the upper inside edge of each hook being provided with a cutting edge, and drive means for imparting pivotal movement to said lever blades relative to said plates whereby weft threads which are disposed between the cutting edge in the grooves and the cutting edge on the hooks are cut by shearing action.

3,596,686

APPLYING TOOL FOR WIRE-TYPE CLAMP

Barry J. Blumenfeld, Randallstown, and Charles K. Mauer, Baltimore, both of, Md., assignors to Cast Iron Soil Pipe Institute, Washington, D.C.

Filed Nov. 3, 1969, Ser. No. 873,365
Int. Cl. B21f *15/02*
U.S. Cl. 140—123 11 Claims



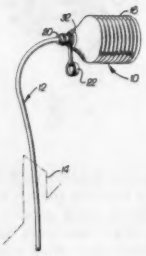
A tool for tightening and clamping around a pipe coupling a single strand of wire formed in two laterally spaced loops connected at one end by an integral bight, with the free shanks of respective loops underlying the bight. The tool comprises a threaded shaft rotatably supported in a frame which has a fulcrum foot at one end for pivotal engagement with the bight between the spaced loops. A pair of shank-gripping blocks are mounted on either side of the shaft for independent, longitudinal, sliding movement with respect to the shaft. A pulling block is threadedly mounted on the shaft and is connected to the gripping blocks by a flexible, load-equalizing cable running freely through an arcuate groove in

the pulling block, with opposite ends of the cable secured to respective gripping blocks. The threaded shaft is rotatable by a handle to retract the pulling block longitudinally on the shaft and thereby exert independent pulling force on the respective gripping blocks and, in turn, on individual shanks of the wire loops. When the respective loops have been tightened to the desired extent, the bodily rotation of the tool about its fulcrum bends the wire shanks over the bight and clamps the loops around the pipe sections. Means are provided for cutting off the excess lengths of the shanks after clamping.

3,596,687
SUCTION SAMPLE CONTAINER

Edward J. Forgeron, Paloso Verdes Peninsula, Calif., assignor to Analysts, Inc., Rolling Hills Estates, Calif.

Filed July 7, 1969, Ser. No. 839,261
Int. Cl. B65b *1/04*
U.S. Cl. 141—24 **3 Claims**

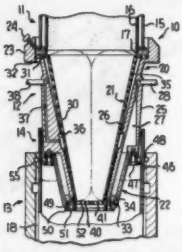


A transfer and storage means adapted to draw off and retain a liquid sample, such as crankcase oil. The transfer means comprises a tube which is adapted to be removably sealed in said storage means. Said storage means includes a compressible suction means and a sealing means to receive said tube. Closure means are associated with said container including cooperating sealing means between said closure means and said container.

3,596,688
FILLER HEAD

Clarence W. Vogt, P.O. Box 232, Westport, Conn.

Continuation-in-part of application Ser. No. 748,087, July 26, 1968. This application Sept. 30, 1968, Ser. No. 763,570
Int. Cl. B65b *1/16*
U.S. Cl. 141—287 **10 Claims**

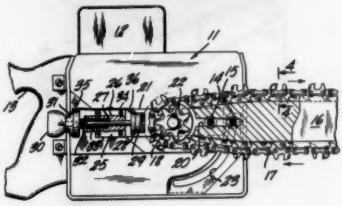


This subject relates to a filler head of a differential pressure-type filler which is particularly adapted for filling containers with a finely divided material. The filler head is particularly adapted for filling containers having an elongated cross section with the filter head including a valve member having a dispensing opening which is also of an elongated cross section, with the elongation thereof corresponding to the elongation of the carton cross section. The cross section of the valve member, including the dispensing opening thereof, providing for a maximum volume and uniform flow for the particular carton for which the filler head is intended. The filler head also includes a lower filter which is of an outer peripheral outline to correspond to the container to be filled and an inner peripheral outline corresponding generally with the dispensing opening of the valve member.

3,596,689
SAW CHAINS AND SHARPENERS

John W. Oehrli, Pacific Palisades, Calif., assignor to Textron, Inc., Providence, R.I.

Continuation-in-part of application Ser. No. 195,519, May 17, 1962, now Patent No. 3,260,287. This application Apr. 12, 1965, Ser. No. 447,434
Int. Cl. B27b *33/14, 17/02*
U.S. Cl. 143—32 **31 Claims**



In a saw chain running on an elongated cutter bar and travelling in an approximately circular path at at least one end of said cutter bar and in an approximately straight path between the ends of said cutter bar, a link comprising an approximately planar body portion, means adjacent opposite ends of said body portion pivotally connecting said link with preceding and succeeding links, a depth gauge portion projecting upwardly from the forward end portion of said body portion, a side portion spaced rearwardly from said depth gauge portion and extending upwardly from said body portion and offset laterally outwardly from the longitudinal center line of the chain, and a cutter portion extending from said side portion inwardly over said body portion at least to the center line of said chain, said cutter portion being defined by a front face inclined at an acute angle to a line connecting the pivot axes of said pivotal connecting means, a rear face substantially equidistant from said front face and an upper edge face defined by a convex surface of revolution concentric with said approximately circular path when said link is travelling therein, said edge face intersecting said rear face at an obtuse angle and intersecting said front face at an acute angle to define a cutting edge disposed between said pivot axes, whereby said cutting edge is resharpened by progressively dressing down said upper edge face by engagement with cutting means as said link travels along said approximately circular path, said cutting edge being disposed rearwardly of the midpoint between said pivot axes and tangents to said convex surface of said upper edge face rearwardly of said cutting edge being inclined at small angles to a line connecting said pivot axes to provide clearance.

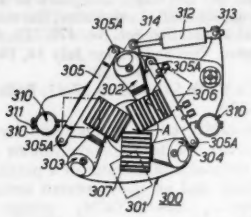
3,596,690
DELIMBER CUTTERS, DELIMBER AND TREE PROCESSING FEED MEANS

Douglas D. Hamilton, Mount Royal, and Joseph J. R. Boivin, Montreal, both of, Canada, assignors to Canadian International Paper Company, Montreal, Quebec, Canada; Quebec North Shore Paper Company, Montreal, Quebec, Canada and Abitibi St. Anne Paper Ltd., Beaupre, Quebec, Canada, a part interest to each

Filed July 11, 1969, Ser. No. 840,930
Claims priority, application Canada, July 12, 1968, 15004/68
Int. Cl. A01g *23/02*
U.S. Cl. 144—2 Z **6 Claims**

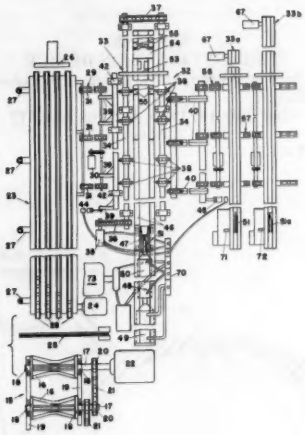
A delimber arm for use in delimbing trees and which may be mounted on a frame, the arm being segmented and with the segments resiliently urged into position with respect to one another whereby the arm or several arms open and close like an iris to closely follow the trunk of a tree having relatively wide variations in diameter. A delimber further incorporating delimbing members of the foregoing type and means for feeding a tree or group of trees endwise through the de-

limber incorporating hydraulic systems for urging the feed rolls against the tree with a force proportional to the force required to propel the tree through the delimber. Further, a tree delimber incorporating a frame having a notch in the



upper surface for supporting one or more trees and one or more cutting members pivotally mounted on the frame and arranged to move toward and away from the recess in the frame for removing limbs from trees moved relative thereto.

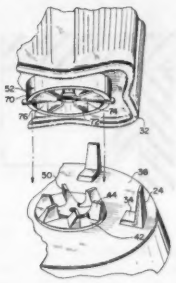
3,596,691
APPARATUS FOR MANUFACTURING WOOD FENCING MATERIAL
Lindell L. Broadfoot, Rte 2, St. Maries, Idaho
Filed June 20, 1968, Ser. No. 738,510
Int. Cl. B27l *7/00*
U.S. Cl. 144—193 **10 Claims**



Apparatus for machine-splitting logs to form wooden fencing materials wherein the log is held while a powered knife or wedge is caused to split it from end to end and additionally having means to hold the split segments according to manual selection in their relative positions while effecting additional splitting functions.

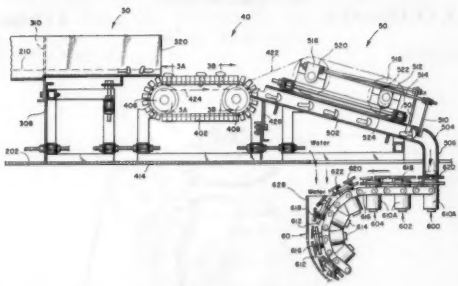
3,596,692
EASY-OFF COUPLING
Roy L. Swanke, Newington, Conn., assignor to Dynamics Corporation of America
Filed Aug. 14, 1969, Ser. No. 850,183
Int. Cl. A47j *43/08*; **B02c** *18/12*, *18/24*
U.S. Cl. 146—68 A **10 Claims**

Means are disclosed to lock a driven shaft through a wall of a vessel and to a flexible coupling adapted to interengage a drive shaft with a mating coupling at the extended end. The lock means comprises in one embodiment, a lever pivoted at one end to the driven shaft and positionable in a first unlocked position so that the longitudinal axis of the lever is aligned with the axis of the shaft and in a second locked position so that its axis is radial to the shaft, whereby the lever, in the aligned position can be withdrawn or inserted through a bore hole in rotatable member, and, in the radial position locks to the rotatable member. In one embodiment, a single lever can be provided and resilient means included to releasably retain the lever in the respective positions. In another embodiment a pair of levers can be used, each



pivotable to a radial position opposite the other from a common axis. The locking levers are preferably flat elongated members proportioned so that their total thickness is such that they can be mounted edgewise in a recess within the driven shaft and that their effective width in unlocked position is no greater than the diameter of the driven shaft or no greater than the diameter of the bore hole upon which or within which they are carried.

3,596,693
MUSHROOM-HANDLING APPARATUS
William H. Baker, Mentor, Ohio, assignor to American Specialty Foods, Inc., Wilmington, Del.
Filed Apr. 18, 1968, Ser. No. 722,267
Int. Cl. A23n *15/04*
U.S. Cl. 146—78 **23 Claims**



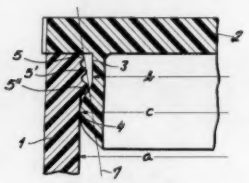
An apparatus is disclosed for handling mushrooms hydraulically in a tank or series of tanks by generally flowing the mushrooms from a mushroom reservoir in an upstream location through a series of devices to a final downstream location where the mushrooms are cut to remove the roots and to separate the stems from the caps. The apparatus includes a device for controlling the rate and quantity movement of the mushrooms which are being hydraulically fed; a device for axially orienting the mushrooms into at least one row along a single axis; a device for directionally orienting the axially oriented mushrooms so that the caps face in the same direction, such as downstream; a device for receiving the directionally oriented mushrooms and for uniformly refeeding them sequentially in timed relationship, preferably in a cap down position; a device for receiving the mushrooms in a cap down position and reversing them to a cap up position; and a device for carrying the mushrooms in the cap up position past cutting blades which first cut off the roots and then separate the stems from the caps.

3,596,694

CONTAINERS

Herbert W. Jaeniche, D-7641, Leutesheim, Germany

Filed Oct. 24, 1969, Ser. No. 869,118
Claims priority, application Austria, Nov. 26, 1968, 11501/68
Int. Cl. B65d *1/16, 39/04*
U.S. Cl. 150—.5 2 Claims



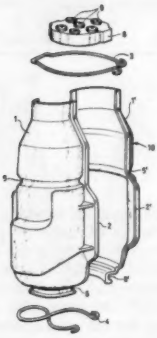
A closure assembly for containers wherein a synthetic-resin plug-type cap has a disk portion adapted to overlie the rim of the container and a cylindrical tubular boss formed with an outwardly convex circumferential bulge or bead of arcuate profile. The inner wall of the container mouth is provided with a plurality of spaced-apart inwardly projecting circumferential beads or bulges of arcuate profile and progressively increasing elevation inwardly from the rim, the bead of the cap resting behind the last or innermost bead of the container mouth in a sealing position of the cap.

3,596,695

PROTECTIVE HOOD FOR IGNITION DISTRIBUTORS OF MOTOR VEHICLES

Aldo Stevenazzi, Rho, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Sept. 29, 1969, Ser. No. 861,928
Claims priority, application Italy, Oct. 8, 1968, 10,139 B/68
Int. Cl. B65d *11/18*
U.S. Cl. 150—52 K 4 Claims



A protective casing for ignition distributors of internal combustion engines is disclosed, comprising two half-shells adapted to encompass the outer surface of the ignition distributor, a resilient cap to be slipped onto the adjoining upper ends of the half-shells, and at least two clips for holding the two half-shells together.

3,596,696

VULCANIZABLE RUBBER COMPOSITIONS AND LAMINATED SOLID RUBBER TEXTILE COMPOSITION BASED ON THE SAME

Helmut Freytag, Cologne-Stammheim; Ivo Dane, Leverkusen; Erwin Muller, Leverkusen, and Guido Fromandi, Schildgen, all of, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 478,723, Aug. 10, 1965, now abandoned. This application July 14, 1969, Ser. No. 849,538
Int. Cl. B29h *5/02*; B32b *27/42*; B60c *5/00*
U.S. Cl. 152—330 14 Claims

Solid vulcanizable rubber composition having improved bonding properties for textile compositions and based on hexamethylol melamine or an ester or a partial ether thereof as a first additive and an m-substituted benzene derivative containing—OH,—$_2$ or—$OCOCH_3$ groups or 1,5-dihydroxynaphthalene as the second additive.

3,596,697

BLENDS OR RUBBERY POLYMERS

Virgil L. Hansley, Cincinnati, Ohio; Raymond G. Newberg, Wyoming, Ohio, and Fred K. Morgan, Cold Springs, Ky., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed May 1, 1968, Ser. No. 725,894
Int. Cl. C08d *11/02, 9/02*; B60c *11/00*
U.S. Cl. 152—330 16 Claims

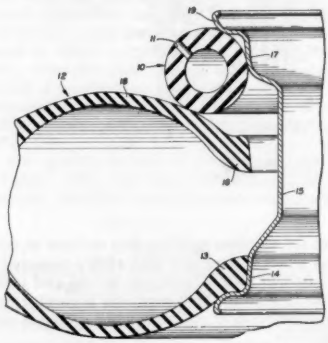
Rubber polymers prepared by polymerizing conjugated diolefinic compounds alone or with other suitable monomers in the presence of an alfin catalyst and a molecular weight control agent are blended with styrene-butadiene rubber to provide novel compositions useful in tire tread formulations.

3,596,698

TIRE INSTALLATION DEVICE

George M. Jordan, Akron, Ohio, assignor to Akro-Mills, Inc., Akron, Ohio

Filed July 14, 1969, Ser. No. 841,377
Int. Cl. B60c *25/12*
U.S. Cl. 157—1.1 12 Claims

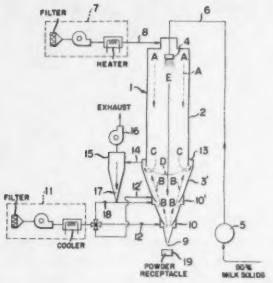


An uninflated torus-shaped tube of soft elastomeric material having high stretch properties for facilitating inflating and seating a tubeless automobile tire on its rim, said tube adapted to be interposed between and to form a seal with the inner surface of the adjacent rim flange and the tire sidewall before inflation thereof, whereby as air under pressure is introduced into the tire between its beads the bead adjacent said tube progressively compresses said tube while maintaining its seal with said sidewall and rim as the bead moves into sealing contact with its bead seat and finally ejects said tube.

3,596,699
APPARATUS FOR SPRAY DRYING MILK AND THE LIKE

Katsuto Okada, Tokyo, and Fumio Kato, Kawasaki-shi, both of, Japan, assignors to Morinaga Nyugryo Kabushiki Kaisha, Tokyo, Japan

Filed May 1, 1969, Ser. No. 820,920
Claims priority, application Japan, May 6, 1968, 43/30199
Int. Cl. B01d *1/16, 1/00;* A22c *1/00*
U.S. Cl. 159—4 4 Claims

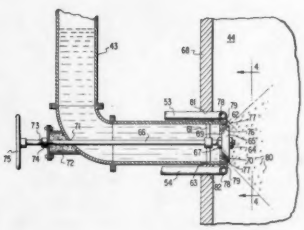


A method of spray drying and apparatus therefor in which milk and the like is sprayed and dried chiefly with hot air. The liquid to be dried is sprayed by means of a single pressure spray nozzle disposed in the upper portion of a drying tower into which hot air is also introduced. The liquid sprayed proceeds downward with the hot air and falls, after being substantially dried, into a zone of cool air provided in the lower portion of the tower where complete drying as well as cooling takes place. The hot air issuing from the upper portion of the tower in the downward direction encounters dry cooling air supplied from the lower portion of the tower about midway in the tower and they are exhausted from the side of the tower.

3,596,700
APPARATUS FOR RECOVERING POLYMERS FROM SOLUTION

Stanford E. Groves, Baton Rouge; Hal G. Ginn, Baker, and John D. Sutherland, Jr., Prairieville, all of, La., assignors to Copolymer Rubber & Chemical Corporation

Filed Apr. 20, 1967, Ser. No. 632,226
Int. Cl. B01d *1/14*
U.S. Cl. 159—16 5 Claims

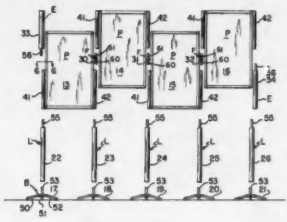


New and improved apparatus for separating polymers from solutions thereof wherein the polymer solution is extruded through an adjustable valve formed by a valve seat having a diverging conical seating surface and a moveable valve member in the form of a diverging frustocone and the resulting cone-shaped polymer thus extruded is broken up into particles of solid particles by a fluid jet, and preferably a steam jet, from an annular header spaced about the valve whereby the crumb size of the resulting polymer can be controlled by displacement of the valve member relative to the valve seat.

3,596,701
DISPLAY PANEL ASSEMBLY

Ermond G. Cowan, St. Petersburg, Fla., assignor to Oravisual Company Inc., St. Petersburg, Fla.

Filed Sept. 11, 1969, Ser. No. 857,085
Int. Cl. A47g *5/00*
U.S. Cl. 160—135 9 Claims

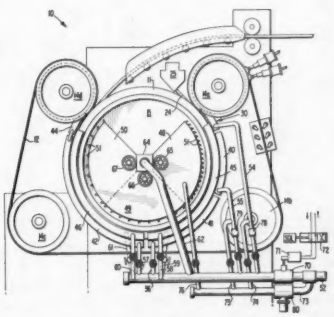


A plurality of identical, reversible, rectangular display panels each has two cylindrical column members along one-half of the length of opposite sides, the panels being arranged side-by-side to form a display unit with the column members on one panel axially aligned with and pivotally attached to the column members of the two adjacent flanking panels by connector pins extending into the adjacent end sections of the members. Individual cylindrical extension members telescoped with the fixed frame members provide continuations of the column members along the other half of the panel edge of the end panels of the display unit. The panels forming the unit are supported vertically by tubular cylindrical legs having upright shanks received in the lower ends of the column members, and the support legs, column members and extension members appear as continuous panel supporting columns. The display panels are assembled and disassembled from their standards and with one another by telescoping slide joints.

3,596,702
PRELIMINARY COOLING OF CONTINUOUS CASTING MACHINE

George C. Ward, and George E. Lenaeus, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Mar. 13, 1969, Ser. No. 806,915
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 4 Claims



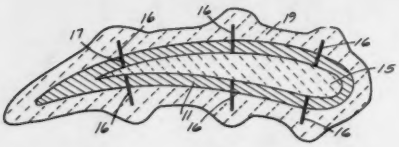
Cooling a continuous casting machine during the preliminary stages of casting molten metal, in which coolant is sprayed at a relatively low velocity onto the external surfaces of the flexible band and casting wheel which form the mold into which the molten metal is poured. The coolant is applied at the relatively low velocity prior to and during the initial pouring of the molten metal, and when the operator of the casting machine has established a proper constant level of molten metal in the mold and the hazard of splashing and explosion of the molten metal has been reduced, the coolant is applied at increased velocities and volumes and the rate of casting the molten metal is increased.

3,596,703

METHOD OF PREVENTING CORE SHIFT IN CASTING ARTICLES

Thomas H. Bishop, Alliance, and Kenneth K. Young, Jr., Paris, both of, Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Oct. 1, 1968, Ser. No. 764,208
Int. Cl. B22d 29/00
U.S. Cl. 164—132 4 Claims



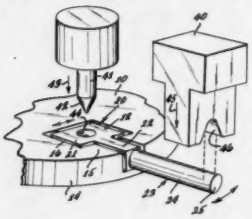
Shell-type casting molds for producing hollow cast articles, the mold being built up by forming a low melting pattern about a ceramic core, inserting thin metal pins through the pattern and into engagement with the core, forming a shell mold about the resulting pattern so that the ends of the pins are anchored in the resulting shell mold, removing the meltable pattern, and casting the molten metal into the cavity thus produced whereby the molten metal dissolves the pins and no holes appear in the finished article.

3,596,704

TRANSFER MECHANISM WITH FLOATING CAST-ARTICLE SUPPORT MANDRELS IN A DIECASTING AND TRIMMING MACHINE

Forrest D. Roe, Gardena, Calif., assignor to A & A Die Casting Co.

Filed Nov. 6, 1969, Ser. No. 874,660
Int. Cl. B22d 17/00, 29/00
U.S. Cl. 164—262 20 Claims



An improved transfer mechanism in a diecasting and trimming machine comprising an indexable turntable with floating mandrels, which extend from the table's periphery. The function of the mandrels is to support runners which in turn support the cast articles. Each station of the machine includes means which accurately position each mandrel in the station irrespective of inaccuracies in the turntable indexed position.

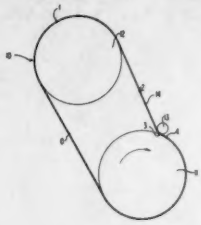
3,596,705

LONG BAND LIFE WHEEL-BAND CASTING MACHINE

John H. Murphy, Atlanta, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Jan. 28, 1970, Ser. No. 6,429
Int. Cl. B22d 11/06
U.S. Cl. 164—278 9 Claims

A machine for continuously casting metal wherein an endless flexible band is guided into closed relationship with a portion of the peripheral groove of a rotatable casting wheel by a plurality of band guide wheels of substantially the same diameter, and a band positioning wheel of smaller diameter than the band guide wheels is positioned adjacent the periphery of the rotatable casting wheel and is arranged to



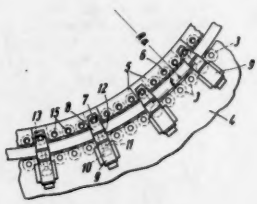
press the flexible band into positive contact with the casting wheel. The ratio between the thickness of the flexible band and the diameter of the smaller band positioning wheel is such that no more than three times the bending strain is applied by the smaller band positioning wheel to the flexible band than the strain applied by the other band guide wheels.

3,596,706

TRACK SUPPORTING ROLLER GUIDE MEANS FOR CASTING TRACKS IN CASTING INSTALLATIONS AND MORE PARTICULARLY IN CURVED CASTING INSTALLATIONS

Johann Knorr, and Otman Kleinhagauer, both of Kapfenberg, Styria, Austria, assignors to Gebr. Bohler & Co. Aktiengesellschaft, Vienna, Austria

Filed Dec. 27, 1968, Ser. No. 787,513
Claims priority, application Austria, Dec. 27, 1967, A 11662/67
Int. Cl. B22d 11/12
U.S. Cl. 164—282 6 Claims



A track supporting roller guide for casting tracks in curved casting installations in which rotatable track supporting rollers are essentially arranged on two equidistant curves or rows with the supporting rollers of at least one curve or row being attached to the lengths of a link chain which link chain is adjustable in the direction of the track.

3,596,707

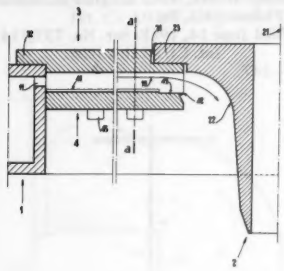
APPARATUS FOR CONTINUOUS VERTICAL CASTING

Serge Peyraud, and Jean Freiche, both of Issoire, France, assignors to Cegedur GP, Paris, France

Filed June 21, 1968, Ser. No. 739,032
Claims priority, application France, June 29, 1967, 112,362
Int. Cl. B22d 11/12
U.S. Cl. 164—283 3 Claims

An apparatus for continuous vertical casting which includes extenders for adapting a casting frame for use with

molds of different format including a member extending crosswise between the frame and mold to support the mold



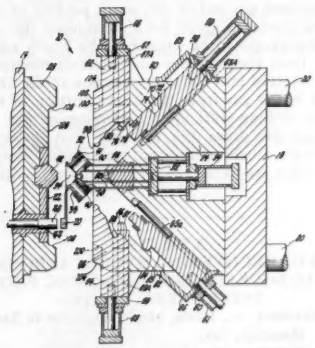
on the frame and to guide coolant liquid from the frame onto the outer walls of the mold.

3,596,708

LOCKING MECHANISM FOR DIECASTING

John Lapin, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1969, Ser. No. 879,121
Int. Cl. B22d *17/26*
U.S. Cl. 164—343 **4 Claims**



A diecasting machine of the horizontal type including a stationary cover die and an ejector die movable along a longitudinal axis between a mold open and mold closed position. The ejector die comprises a plurality of die elements including die elements movable obliquely to the longitudinal axis of the die assembly and other die elements movable transversely of the longitudinal axis of the die assembly. In accordance with the invention the transversely movable die elements interlock with and hold the obliquely movable die elements in a closed position and the cover die interlocks with and holds the transverse die elements in a closed position when the cover die and ejector die assembly are in a closed position.

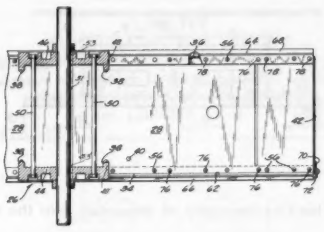
3,596,709

TRANSFER WHEEL ASSEMBLY FOR AIR CONDITIONER

Konstantins Dravnieks, Madison, Wis., assignor to Wehr Corporation, Milwaukee, Wis.

Filed Nov. 28, 1969, Ser. No. 880,544
Int. Cl. F28d *19/04*
U.S. Cl. 165—9 **15 Claims**

To hold radially extending blades of a transfer wheel in a desired orientation in the wheel notches are provided in the axially facing edges of each blade and a hub is provided which includes a pair of generally annular, axially spaced projections projecting toward each other. The radially outer ends of the blades are trimmed to length using the notches as a reference point and the hub projections fit into the blade notches. The notch and projection connection holds the blades against radial movement relative to the hub. The hub



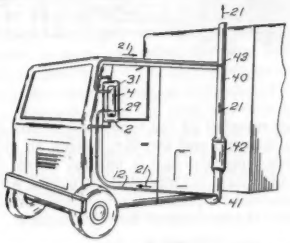
is also provided with a number of ribs spaced circumferentially with respect to each other and all arranged in radial spaced relation from the hub projections. Each blade extends between an adjacent pair of ribs for engagement by the ribs to thereby prevent angular movement of the blades.

3,596,710

SELF-DEFROSTING EXTERIOR-TYPE VEHICLE MIRROR ASSEMBLY

Arthur Neal, Dayton, Ohio, assignor to John P. Tarlano, Dayton, Ohio, a part interest

Filed Dec. 16, 1969, Ser. No. 885,498
Int. Cl. F25b *29/00*
U.S. Cl. 165—41 **1 Claim**



The present invention relates to a self-defrosting exterior-type vehicle mirror assembly which frees the front viewing surface of the mirror therein of ice or snow or a collection of moisture. Two pipes are attached into the back cover of a standard exterior-type vehicle mirror assembly. Vehicle exhaust gas is passed from the high-pressure side of a vehicle muffler through the chamber between the back cover of the standard exterior-type vehicle mirror assembly, and the back nonviewing surface of the mirror therein.

Heat is transmitted by thermal conductivity to the front-viewing surface of said mirror, to remove frost, ice or moisture which has accumulated thereon. An exit pipe is provided within said back cover of said standard exterior-type vehicle mirror assembly for exiting cooled vehicle exhaust gas from the chamber into the low pressure side of a vehicle muffler.

3,596,711

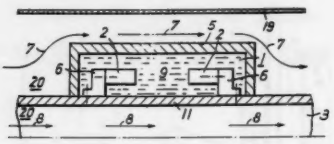
COOLING APPARATUS

Hubert Rothert, Berlin; Eugen Renz, Mulheim/Ruhr, and Helmut Widder, Essen-Heidhausen, all of, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed June 26, 1969, Ser. No. 836,720
Claims priority, application Germany, June 28, 1968, P 17 63 597.1
Int. Cl. F28d *11/00*
U.S. Cl. 165—86 **8 Claims**

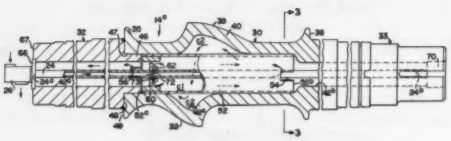
Cooling apparatus for electrical components includes a chamber for retaining cooling liquid therein, electrical com-

ponents which generate heat mounted within the chamber, means mounting the chamber for rotation about an axis and



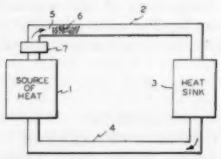
means for limiting the entry of impurities into the chamber means.

3,596,712
MIXING MACHINE ROTOR
James T. Matsuoka, Brecksville, and Armindo Cantarutti, Akron, both of, Ohio, assignors to Stewart Bolling & Co. Inc., Celveland, Ohio
Filed Feb. 28, 1969, Ser. No. 803,344
Int. Cl. F28f *5/04*
U.S. Cl. 165—92 **4 Claims**



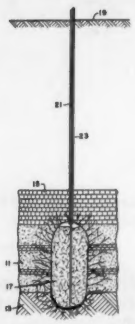
A bladed rotary member of the type used to mix or work rubber or plastic material and the like, having an elongated body with a bladed portion and a central cavity through which heat exchange fluid is circulated. Structure within the bladed portion establishes specific flow paths to direct circulating fluid adjacent the surfaces of the rotor blades.

3,596,713
LIQUID-SOLID HEAT TRANSPORT SYSTEM
Leonhard Katz, Woburn, Mass., assignor to Astro Dynamics, Inc., Burlington, Mass.
Continuation of application Ser. No. 597,747, Aug. 29, 1966, now abandoned. This application Jan. 27, 1969, Ser. No. 797,362
Int. Cl. F28d *15/00*
U.S. Cl. 165—107 **9 Claims**



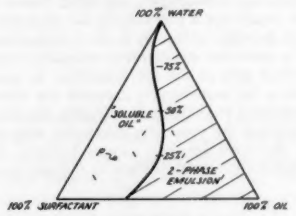
The present disclosures deals with the utilization of a plurality of particles disposed within a transport fluid and each containing either a high heat of fusion material or a high heat of vaporization material bound within an impermeable housing that is nonreactive with the fluid and the said material and that enables the absorption of heat within such particles to the substantial exclusion of the fluid, whereby the fluid may remain at a substantially fixed temperature.

3,596,714
REDUCTION OF RADIOACTIVITY IN A NUCLEAR CHIMNEY AFTER STIMULATION OF A GAS RESERVOIR
Henry F. Dunlap, Dallas, Tex., assignor to Atlantic Richfield Company, Philadelphia, Pa.
Filed June 14, 1968, Ser. No. 737,114
Int. Cl. E21b *43/26*
U.S. Cl. 166—247 **12 Claims**



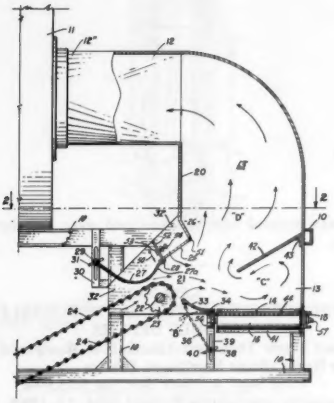
Gaseous radioactivity in a chimney after stimulation of a gas reservoir with a nuclear explosive is reduced by injecting a heavy gas substantially free of unreacted oxygen into the lower portion of the chimney to displace the lighter, radioactive contaminated gas out of the upper portion of the chimney. Several ways are given for determining the minimum amount of heavy gas to be injected. The heavy gas may be backflowed from the chimney and uncontaminated natural gas may be injected into the upper portion of the chimney to displace the heavy gas from the lower portion of the chimney. Due to drilling difficulties, injection of gas into and production of gas from the chimney may be conducted through a single, dually completed well drilled alongside the chimney in the fractured zone immediately adjacent the chimney.

3,596,715
METHOD OF RECOVERING HYDROCARBONS WITH HIGHLY AQUEOUS SOLUBLE OILS USING PHOSPHATE ESTER SURFACTANTS
William G. Halbert, Jr., Butte, Mont., assignor to Tenneco Oil Company, Houston, Tex.
Filed Jan. 15, 1970, Ser. No. 3,062
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **4 Claims**



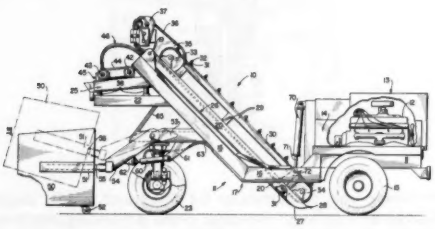
A method for secondarily recovering hydrocarbons using soluble microemulsions which are highly resistant to phase separation due to water dilution and which are created by contacting certain hydrocarbons with an organic phosphate surfactant. The method for recovering hydrocarbons from underground formations includes the steps of injecting the soluble oil microemulsion through an injection well penetrating the formation. It also includes injecting an aqueous drive fluid through the injection wall, thereby displacing the hydrocarbon within the formation toward the second wellbore, and producing the oil to the surface through the second wellbore.

3,596,716
PNEUMATIC POTATO HARVESTERS
Carl C. Hoffman, Monte Vista, Colo., assignor to Lockwood Corporation, Gering, Nebr.
Filed May 27, 1968, Ser. No. 732,355
Int. Cl. A01d *17/00*
U.S. Cl. 171—17 9 Claims



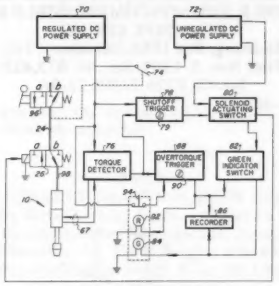
Conventional digger chains delivering directly into the intake of a vacuum chamber and directly onto a potato removal conveyor over adjustable flexible flaps which individually flex downwardly to discharge rocks from the potato stream and flex upwardly to control the air stream.

3,596,717
BEACH-CLEANING VEHICLE
Valdemar Knudsen, 2443 Makiki Heights Drive, Honolulu, Hawaii
Filed Sept. 29, 1969, Ser. No. 861,951
Int. Cl. A01b *43/00*
U.S. Cl. 171—63 5 Claims



The vehicle is of the type adapted to move over the ground and by means of a scoop, elevator, shaker screen and receptacle, to separate large particles of the ground surface retrieved from smaller particles thereof, such as beach sand from trash contained therein, and to return the former to the ground or beach, while retaining the larger particles (trash) in the receptacle for transport elsewhere. The vehicle is equipped with an engine, for propulsion, from which power takeoffs operate hydraulic systems which in turn operate: a pivoted conveyor equipped with a ground scoop at its lower end, engaging the ground with a selective ground penetration; the conveyor feeding onto a powered shaker or separator screen, the screen serving to free and return to ground small particles passable through the mesh thereof, while retaining and passing into a bin the larger particles for discard or other usage; a bin, located adjacent the delivery end of said screen, the bin being mounted on the vehicle by raising and lowering arms. The vehicle is 4-wheel drive and steered by the rear wheels to reduce torque in the conveyor scoop in its ground engagement and to assist coverage of a complete area without gaps. The wheel arrangement further allows the shaker device to discharge to the rear of (and hence covering) the tracks made by the vehicle. All controls are trained forward to a single operator.

3,596,718
TORQUE CONTROL SYSTEM
Charles Dennis Fish, and Ronald B. Schildt, both of Quincy, Ill., assignors to Gardner-Denver Company, Quincy, Ill.
Filed July 2, 1969, Ser. No. 838,397
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 9 Claims



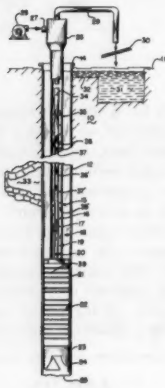
A control system for a torque producing power tool such as a nutsetter, screwdriver, or the like. The control system includes an electromechanical transducer which operates on the principle of a linear variable differential transformer. The transducer, in part, comprises the final drive spindle of the tool and is thereby in close proximity to the fastener being tightened. An electrical signal is produced by the transducer which is proportional to the torsional motive force applied to the drive spindle. The control system includes switching devices operable in response to a predetermined signal from the transducer to shut off the power supply to the tool and actuate various system condition indicators.

3,596,719
EARTH CORE SAMPLER
Stephen S. Koziski, 872 Upper Sherman Avenue, Hamilton, Ontario, Canada
Filed July 7, 1969, Ser. No. 839,177
Int. Cl. E21b *11/02*; G01n *1/00*
U.S. Cl. 175—20 7 Claims

An earth core sampler comprises an elongated body with an elongated sampling member eccentrically mounted

therein and movable by a handle against a spring between an open position in which a scraping edge projects from the sampler and a closed position; an earth sampling groove is provided in the sampling member immediately adjacent the scraping edge; the device is driven into the ground by any suitable means, as for example by a vibratory hammer attached to one end, and the sampling member opened while the sampler is rotated to scrape earth from the bore wall and form a sample in the groove; the sampling member is then closed and the sampler withdrawn from the bore. The elongated sample that is obtained is representative of the whole length of the bore.

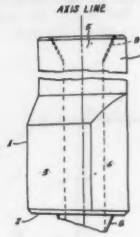
3,596,720
METHOD OF FORMING A BOREHOLE USING A COMPRESSIBLE AND NONCOMPRESSIBLE FLUID IN A DUAL PIPE STRING
Wayland D. Elenburg, Box 1588, Monahans, Tex.
Filed Nov. 3, 1969, Ser. No. 873,415
Int. Cl. E21b *21/00, 21/04*
U.S. Cl. 175—69 **13 Claims**



Drilling apparatus having a dual pipe string connected to a drill bit by a bit sub, with the bit sub comprising one or more subs, with the outer surface of each sub including turbulence producing means formed thereon. Compressible fluid is flow connected to the pipe annulus while drilling fluid is flow connected to the hole annulus, and the length of the bit sub is adjusted to control the pressure drop of the noncompressible fluid thereacross to thereby control the ratio of compressible and noncompressible fluid which flows up through the central passageway, carrying formation samples formed by the bit admixed therewith.

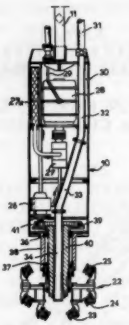
3,596,721
APPARATUS FOR DEVIATION BOREHOLE DRILLING
Howard Trethewen Edgecombe, Filton, England, assignor to Rolls-Royce Limited, Derby, England
Filed Jan. 27, 1969, Ser. No. 794,222
Claims priority, application Great Britain, Feb. 2, 1968, 5557/68
Int. Cl. E21b *7/04*
U.S. Cl. 175—73 **7 Claims**

A bent-sub, which is a deviation control device, has arcuate stabilizing surfaces on opposite sides of the plane containing the direction of deviation of the borehole, the maximum width between the surfaces being nearly equal to but less than the diameter of the borehole and an arcuate knee contact area, so that when the direction of the deviation is changed by rotating the drill string, the bent-sub is encouraged to slide, rather than roll, around the borehole wall



and greater control can be exercised over the direction of deviation.

3,596,722
BORING UNIT, IN PARTICULAR FOR SMALL AND MIDDLE DEPTHS
Pierre Jean Marie Theodore Allard, 178, Boulevard Francois 1er, Le Havre (Seine Maritime), France
Filed Sept. 4, 1969, Ser. No. 855,094
Claims priority, application France, Sept. 13, 1968, 166,062
Int. Cl. E21b *3/12, 7/02*
U.S. Cl. 175—93 **10 Claims**

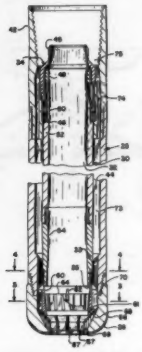


A boring unit, in particular for small and middle depths, comprising a cylinder hanging from a hoisting apparatus mounted on a truck, rotary drilling means mounted at the end of the cylinder, at least one bar for axially lowering the said cylinder and driving the said rotary drilling means into the borehole, a fixed plate for holding against rotation the said bar which is solid with the said cylinder, and means for recovering the drilling waste from the boring hole.

3,596,723
CORE-RETRIEVING METHOD AND APPARATUS
Wayland D. Elenburg, P.O. Box 1588, Monahans, Tex.
Continuation-in-part of application Ser. No. 714,551, Mar. 20, 1968, now Patent No. 3,473,617. This application June 9, 1969, Ser. No. 831,361
Int. Cl. E21b *9/20, 25/00*
U.S. Cl. 175—255 **8 Claims**

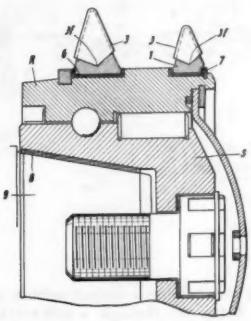
Apparatus for retrieving cores while drilling a borehole which enables an elongated cylindrical solid core sample to be obtained from a formation. A coring bit together with a core barrel which remains stationary with respect to the core being cut enables the core to be broken into predetermined

lengths and circulated uphole to where the core is captured within a core retriever made in accordance with the present



invention, and which enables the intact core to be removed from the drill string.

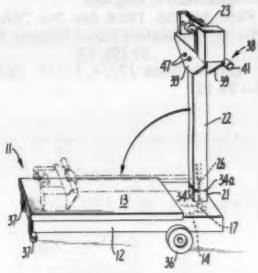
3,596,724
CUTTING ROLLER
Karl Gunther Bechem, Hagen, Germany, assignor to J. C. Soding & Halback KG, Hagen, Germany
Filed June 7, 1968, Ser. No. 735,431
Claims priority, application Germany, June 9, 1967, P 15 33 703.8
Int. Cl. E21b *9/14;* **E21c** *13/01*
U.S. Cl. 175—331 **5 Claims**



A cutting roller for use in rock-boring equipment and having two circumferentially extending parallel cutting ribs. Each rib is provided with a series of wear-resistant exchangeable inserts which protect the crown and flank surfaces of the rib against wear.

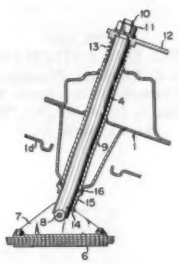
3,596,725
HINGED COLUMN FOR SCALE
Douglas M. Homs, c/o Douglas Homs Corp, 1538 Industrial Way, Belmont, Calif.
Filed Nov. 1, 1968, Ser. No. 772,489
Int. Cl. G01g *21/00*
U.S. Cl. 177—126 **4 Claims**

A column for scales is provided with a hinge near the base of the column to permit the column to be pivoted inward to rest on the scale platform during shipment, for field use, and storage. The steelyard is connected to the long lever nose iron by a chain or other flexible connection to facilitate pivotting. The hinge is duplicated on opposite sides of the column so that the column and beam may be rotated 180° to make the beam readable from the front or reverse sides of the scale by an easily performed reversal operation. A handle for tilting to facilitate moving the scale on its two wheels and



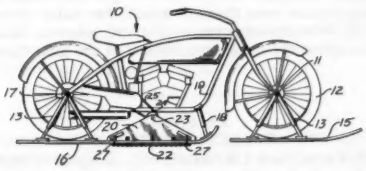
snubbers protecting the column and platform in horizontal position are likewise reversible.

3,596,726
ENDLESS-BELT TRACTION SNOW VEHICLE
Noria Takada, Shizuoka-ken, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan
Filed Mar. 27, 1969, Ser. No. 810,993
Claims priority, application Japan, Mar. 30, 1968, 43/20663
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 **8 Claims**



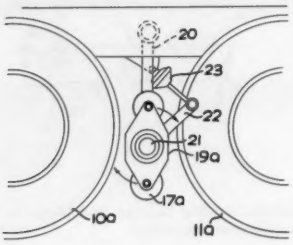
An endless-belt traction snow vehicle has a pair of front skis for directing the course. Said skis are supported at the front bottom of the vehicle body by extensible leg members which are fixed to the vehicle body in a suitable length desired each time.

3,596,727
RUNNER ATTACHMENT FOR MOTORCYCLE
Vincent A. Graham, Rte. 1, Salem, S. Dak.
Filed June 2, 1969, Ser. No. 829,461
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 **6 Claims**



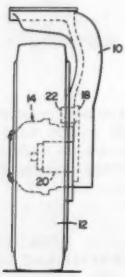
A device adapted to convert a motorcycle into a vehicle adapted to be driven over snow covered surfaces including a skilike front runner for attachment to a front wheel and a similar runner for the rear wheel; the rear runner having a belt driven by power from the cycle engine.

3,596,728
EMERGENCY DRIVE FOR VEHICLES
George Edgar Neville, Cresta Lodge, Robin Down Lane, Mansfield, Nottinghamshire, England
Filed Dec. 26, 1968, Ser. No. 786,970
Claims priority, application Great Britain, Dec. 30, 1967, 59290/67
Int. Cl. B60k *17/14, 17/36, 59/02*
U.S. Cl. 180—24.12 5 Claims



In a vehicle having front and rear pairs of wheels, the two wheels at each side are connected at will by a roller arrangement acting as an idler. There may be a mechanical or hydraulic connection between the rollers at opposite sides of the vehicle, providing a differential lock. Alternatively, an emergency drive for a single pair of wheels is provided by hydraulically driven rollers movable into and out of engagement with the wheels.

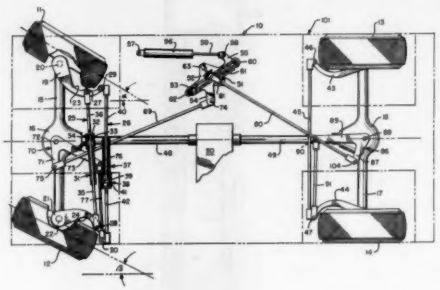
3,596,729
WHEEL DRIVE MECHANISM
John B. Shaw, 1812 E. Marlette, Phoenix, Ariz., and William H. Schwartz, 260 Summit Drive, Corte Madera, Calif.
Filed Jan. 8, 1969, Ser. No. 789,906
Int. Cl. B60k *7/00*
U.S. Cl. 180—55 1 Claim



A wheel drive mechanism having a drive motor which is substantially shrouded and protected by a gear train casing containing a gear train through which the motor drives the wheel. The drive motor is removable and, when so removed, does not expose the inside mechanism of the gear train casing.

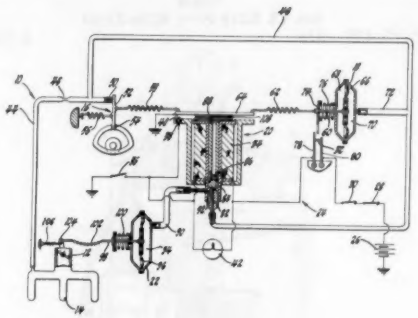
3,596,730
STEERING SYSTEM
Robert F. Cecce, New Carrollton, Md., assignor to Fairchild Hiller Corporation, Montgomery County, Md.
Filed Apr. 22, 1969, Ser. No. 818,207
Int. Cl. B62d *5/06, 7/16*
U.S. Cl. 180—79.2 R 17 Claims

This invention includes a steering system for use with a vehicle capable of exhibiting three modes of steering, said vehicle having forward and rearward wheels, the first of said modes comprising forward-wheel steering control of the vehicle, the second and third of said modes comprising forward- and rearward-wheel steering control of the vehicle, the



system including means for converting one of said modes to another.

3,596,731
VEHICLE ROAD SPEED CONTROL SYSTEM
Douglas I. Fales, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 14, 1969, Ser. No. 876,730
Int. Cl. B60k *15/00*
U.S. Cl. 180—108 3 Claims

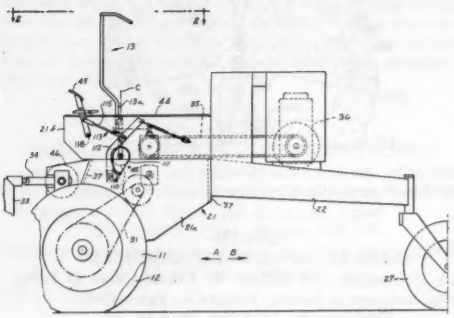


A system for maintaining a desired vehicle speed, with the desired speed being set through a self-tracking sensor. A vehicle road speed-responsive valve is connected to a tracking spring which is moved by a vacuum-operated servomotor under control of the valve so that the position of the tracking spring, and therefore the tension exerted by it, reflects vehicle speed. This tension is set by a valve and lock assembly when the system is energized, so that the control valve desired vehicle speed input is set. Another servomotor also operating under control of the control valve is connected to operate the vehicle engine throttle valve to maintain the desired vehicle speed substantially at the set speed.

3,596,732
SPEED AND DIRECTION CONTROL MECHANISM FOR A TRACTOR HAVING TWO SEPARATELY DRIVEN FRONT WHEELS
Emmett F. Glass, Akron; Edmund O. Howell, New Holland, and Bruce D. Schwalm, Leola, all of, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Apr. 14, 1969, Ser. No. 816,001
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 12 Claims

A tractor with two spaced front wheels and a trailing tail wheel has an operating lever controlling two sets of hydraulic pumps and motors independently driving a respective front

wheel. The operating lever controls the pumps and motors through a linkage system by movement in a vertical longitudinal plane and the turning of the tractor by clockwise or



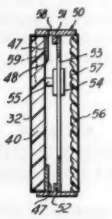
counterclockwise rotation of the lever. Releasable friction means hold the lever in a given position in the longitudinal plane.

3,596,733

FLAT DIAPHRAGM FOR SOUND TRANSDUCERS AND METHOD FOR MANUFACTURING IT

Jose Juan Bertagni, 1027 Hernandarias, Buenos Aires, Argentina

Filed Dec. 29, 1969, Ser. No. 888,990
Claims priority, application Argentina, Dec. 30, 1968, 218.851
Int. Cl. G10k *13/00;* **H04r** *7/00;* **B32b** *31/00*
U.S. Cl. 181—32 **22 Claims**



A flat diaphragm for sound transducers and a method for producing it, including providing in a cellular platelike member a pretensioned front face and a rear face defining an irregularly shaped figure portion including a central stiffened portion at a zone out of the geometric center of said figure portion, and a marginal vibration damper portion substantially circumscribing said figure portion, said central stiffened portion defining a center for capturing vibrations. The flat diaphragm is preferably made of a granular expanded-bonded cellular, strong, stiff, imperforated plastics platelike member.

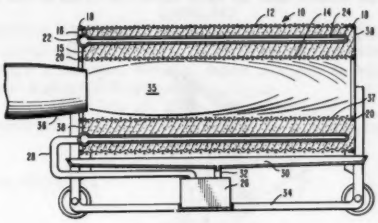
3,596,734

MEANS AND METHOD FOR NOISE SUPPRESSION

Donald N. Yates, Jr., Chatsworth, Calif., assignor to Leisure Systems Corporation, Manhattan Beach, Calif.

Filed July 7, 1969, Ser. No. 839,318
Int. Cl. F01n *3/04;* **B64d** *33/06*
U.S. Cl. 181—33 **10 Claims**

The suppression of noise radiating from a high-velocity, unconfined stream of gas is accomplished by radially surrounding the unconfined stream of gas with a blanket of foam from a location adjacent its origin and extending axially



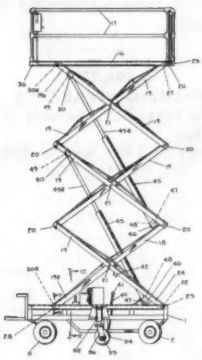
of the stream of gas for a distance equal to several diameters of the stream at its origin.

3,596,735

PORTABLE ELEVATOR WORKING AND LOAD-LIFTING PLATFORM

Howard H. Denier; Dennis J. Denier; Thomas Hedger, and Lee R. Garrett, all of Cincinnati, Hamilton County, Ohio, assignors to Howard H. Denier, Cincinnati, Ohio

Filed Oct. 30, 1969, Ser. No. 872,542
Int. Cl. E04g *1/22*
U.S. Cl. 182—16 **24 Claims**



The invention teaches the use of a hydraulic system having primary ram booster means to start the raising of a platform coacting with other ram means to raise and lower the platforms. The platform is raised and lowered by remote control by a workman on the platform and it also can be raised and lowered by any one not on the platform. It utilizes a vehicle for the platform having a usual controlled rectified electric circuit for a motorized driving means for the vehicle that prevents the drive motor attaining maximum speed when the platform is slightly raised above the chassis and permits the drive motor to attain maximum speed when the platform is completely collapsed down on the chassis. It is steered while in motion in any desired direction, hydraulically under remote control by the workman while the platform is at either its lowest or uppermost position.

3,596,736

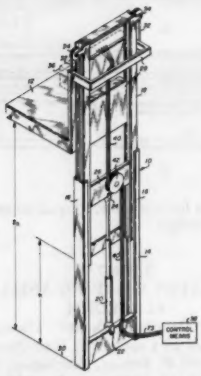
MEANS FOR PROVIDING PLURAL ELECTRICAL INTERCOMMUNICATION BETWEEN RELATIVELY MOVING TERMINALS

Lynn D. Crawford, San Jose, Calif., assignor to Mobility Systems, Inc., Santa Clara, Calif.

Filed Apr. 28, 1969, Ser. No. 819,804
Int. Cl. E04g *1/18*
U.S. Cl. 182—148 **3 Claims**

A plural conductor cable and cable-carrying apparatus for interconnecting a control console mounted to a movable

platform and a relatively stationary control means. The cable-carrying apparatus is comprised of a spring-biased reel means which causes a single unbroken length of ribbonlike cable to be wound back on itself about the drum of the reel



means as the tension applied to the ends thereof is relaxed so that no slack is allowed to develop in the cable. On the other hand, the cable is played out in two directions upon application to the cable of a tension exceeding the spring return force of the reel means.

3,596,737

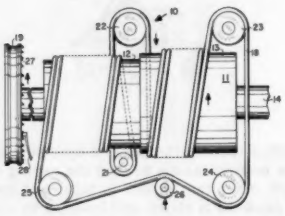
BRAKING APPARATUS

Victor F. Volk, New York, N.Y., assignor to Anaconda Wire and Cable Company

Filed July 10, 1969, Ser. No. 840,755

Int. Cl. F16d *63/00*

U.S. Cl. 188—1 R **14 Claims**



A brake or tensioning device does not rely on friction to absorb energy but absorbs energy by the elongation of an endless strand passing from a smaller to a larger capstan. The strand is continuously relaxed in passing back again to the smaller capstan.

3,596,738

VEHICLE SHOE DRUM BRAKES

Charles Newstead, Walsall, England, assignor to Girling Limited, Tyseley, England

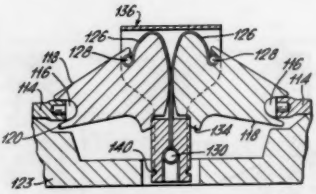
Filed May 7, 1969, Ser. No. 822,477

Claims priority, application Great Britain, May 9, 1968, 21,936/68

Int. Cl. F16d *51/22*

U.S. Cl. 188—78 **3 Claims**

The invention relates to an internal shoe drum brake of the type in which an expansion movement is imparted to the brakeshoes through thrust members which in turn are moved apart by cams having cam surfaces in rolling contact with one another, the rolling motion of the cams being controlled by a pull rod. In such a brake construction, the invention provides a flexible strap or a pivotal link between the pull rod and each cam, the strap or the link being pivoted to the cam.



Additionally, the invention provides for articulated engagement of each cam with the cooperating thrust member.

3,596,739

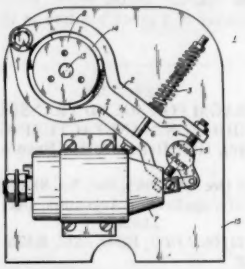
SPEED RESPONSE BRAKE ASSEMBLY

Claude C. Ramsey, and William W. Ramsey, both of Tulsa, Okla., assignors to Ramsey Winch Co., Tulsa, Okla.

Filed June 30, 1969, Ser. No. 837,722

Int. Cl. B60t *13/04, 8/04*

U.S. Cl. 188—105 **2 Claims**



An electrical brake-clutch assembly useful in controlling the speed of rotation of a shaft capable of moving in a forward or reverse direction. The speed response brake in combination with the electrically controlled brake becomes effective to overcome the override in an electric motor caused by the excessive speed of the assembly shaft connected to the electric motor.

3,596,740

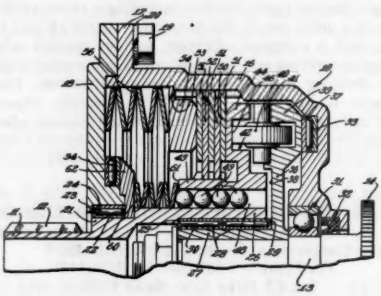
TORQUE LIMITER

Carl S. Nau, South Euclid, Ohio, assignor to TRW Inc., Cleveland, Ohio

Continuation-in-part of application Ser. No. 746,586, July 22, 1968, now abandoned. This application Jan. 27, 1970, Ser. No. 6,110

Int. Cl. B60t *7/12*; **F16d** *67/00*

U.S. Cl. 188—134 **18 Claims**



A bidirectional torque limiter operable as a torque sensitive brake to stop the motion of the power supply while limit-

ing the output torque when a jam occurs in the driven mechanism. The inertia of the power supply is dissipated by providing for limited relative motion between the input and output shafts of the torque limiter while absorbing the kinetic energy of the drive unit by means of a friction brake. By reversing input and output shafts, a torque-limiting device is provided which will not release following lockup even if the output torque is reduced to zero unless the input torque is reduced below the lockout torque level or is reversed in direction of rotation.

3,596,741

DRUM BRAKE ASSEMBLY INCLUDING PLURAL OPERATOR

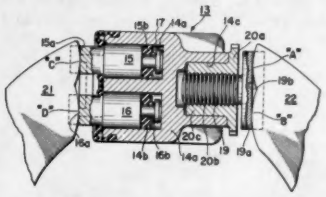
Haruo Miyajima, Kariya-shi, Japan, assignor to Aisin Seiki Company Limited, Kariya-shi, Aichi-ken, Japan

Filed May 20, 1969, Ser. No. 826,111

Claims priority, application Japan, May 25, 1968, 43/4338.4

Int. Cl. B60z *11/16;* **F16d** *65/24*

U.S. Cl. 188—152 **5 Claims**



A drum brake assembly for powered vehicle, said assembly comprising two independently operable hydraulic piston-and-cylinder units for operating a pair of brakeshoes for expanding, said assembly being characterized by that the parallel hydraulic pistons are kept in mechanical engagement with one of said shoes and the oppositely outer end of said wheel cylinders is kept in mechanical engagement at a plurality of points with the remaining one of said shoes and said engaging points are positioned on the respective extensions of the longitudinal axes of said hydraulic pistons, for minimizing otherwise possible development of severe turning moment acting upon the hydraulic cylinder means for the both pistons.

3,596,742

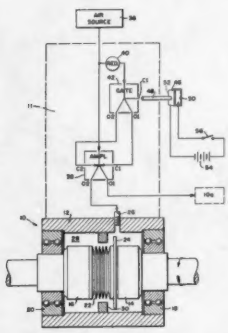
CLUTCH AND BRAKE FLUIDIC CONTROL SYSTEM THEREFOR

Stephen J. Zierak, Westwood, Mass., assignor to Metal Bellows Corporation, Sharon, Mass.

Filed Nov. 14, 1969, Ser. No. 876,862

Int. Cl. F16d *67/04;* **F15c** *1/14*

U.S. Cl. 192—14 **5 Claims**



A bellows-operated clutch is actuated by a sharp pulse from a fluidic digital amplifier. The amplifier is controlled, in turn, by a fluidic gate which can be pulsed on and off very rapidly.

3,596,743

CONTROL SYSTEM FOR AUTOMATIC STOPPING OF A MACHINE ELEMENT IN A PREDETERMINED POSITION

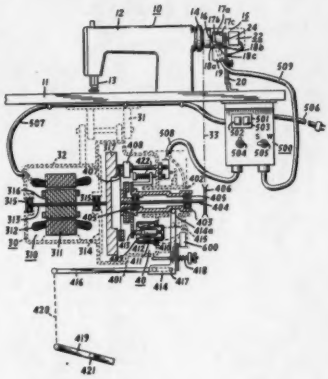
Masahiro Yokoyama, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed July 28, 1969, Ser. No. 845,264

Claims priority, application Japan, Aug. 1, 1968, Aug. 1, 1968, 43/54566;43/54567

Int. Cl. F16d *71/04, 67/06*

U.S. Cl. 192—142 **2 Claims**



Upon decelating a rotary machine, an electric control circuit energizes an electromagnet. A capacitor charges in the normal mode of operation and beings to discharge upon braking of the machine by a brake device. A relay is energized in the normal mode and utilizing a discharge current from the capacitor, closes its normally open contacts thereby connecting the control circuit to a position sensor. The sensor responds to the machine being at one of its predetermined positions during the energization of the electromagnet to stop it through the brake device after which the relay maintains the control circuit disconnected from the sensor through the normally open contacts. A second relay is energized to change that position where the machine is to stop.

3,596,744

COIN-TESTING APPARATUS

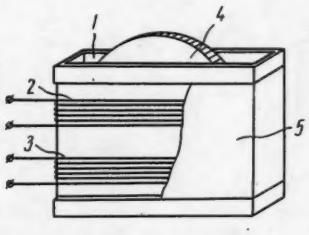
Vladimir Yakovlevich Chesnokov, Kuznetsovskaya ulitsa, 10, kv. 115, and Valentin Petrovich Nikitin, Prospekt Shaumiana, 58, kv. 45, both of Leningrad, U.S.S.R.

Filed Mar. 26, 1969, Ser. No. 810,732

Claims priority, application U.S.S.R., Apr. 27, 1968, 1236119

Int. Cl. G07f *3/02*

U.S. Cl. 194—100 **2 Claims**



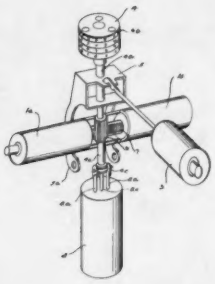
A coin tester for vending machines in which the coin to be tested forms a core to concentrate the magnetic flux between a first coil provided with a constant voltage AC current, and a second testing or measuring coil in which an EMF is to be

induced whereby deviations of the magnetic properties of a coin being tested from the magnetic properties of an acceptable coin will cause a signal actuated by said testing or measuring coil to reject the coin if it is counterfeit.

3,596,745
SOLENOID OPERATED TYPE HEAD SETTING ARRANGEMENT

Hermann Waldenburger, Wolkersdorf, Germany, assignor to Grundig E. M. V. Elektro-Mechanische Versuchsanstalt, DNH. Max Grundig, Fuerth/Bavaria, Germany

Filed Sept. 6, 1968, Ser. No. 757,918
Claims priority, application Germany, Sept. 7, 1967, G 37 918/15g
Int. Cl. B41j *1/26*
U.S. Cl. 197—55 **4 Claims**

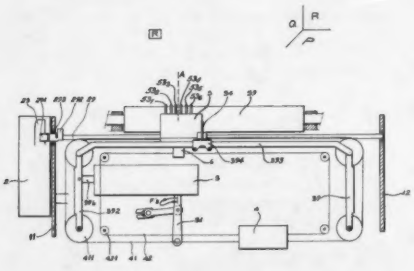


The keys of a typewriter effect the energization of selected electromagnetic windings whose cores are displaced steps of different length. The cores are connected to a control element which is displaced a distance corresponding to the total of the steps made by the cores. The displaced control element sets the type head to a selected position in which a selected type face, associated with the operated key, is operative.

3,596,746
MULTITYPE WHEEL PRINTING MACHINE

Jean-Pierre Murat, Argenteuil, France, assignor to Societe D'Applications Generales D'Electricite et de Mecanique, Paris, France

Filed Sept. 24, 1969, Ser. No. 860,524
Claims priority, application France, Sept. 25, 1968, 167,510
Int. Cl. B41j *1/26*
U.S. Cl. 197—55 **4 Claims**

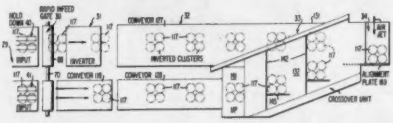


Teleprinting machine in which the characters are distributed on a plurality of type wheels. It comprises a type wheel carriage slidable along and rotatable about a selector shaft, a plurality of type wheels mounted on said type wheel carriage and rotatable about and controlled in rotation by said selector shaft, a striker carriage, a stepping mechanism for imparting to both said striker and type wheel carriages a step-by-step movement, means for receiving character signals expressed in the binary code, a rotary selector device and a traversing selector device respectively controlling the selector shaft in rotation and the type wheel carriage in translation. These two devices include a reciprocating crank and link mechanism controlled by the receiving means, two racks and a pinion, the two racks meshing at two diametrically opposite points of the pinion, two toggles respectively connecting the two racks to the crank and link mechanism, a rack selector switching member controlled by the receiving means for selecting a rack out of the two ones, and a plurality of mobile stop members selectively positioned by the receiving means on the path of the toggles for stopping the racks at quantified predetermined positions. The pinion of the rotary selector device drives the selector shaft and the pinion of the traversing selector device drives the type wheel carriage.

3,596,747
BAKERY-PRODUCT-STACKING METHOD AND APPARATUS

Frank M. Irving, Jr., York; Albert S. Schmidt, Sr., Wormleysburg; Ronald G. Andrus, Wrightsville, and Herbert J. P. Beckius, York, all of, Pa., assignors to Alto Company, York, Pa.

Filed May 27, 1968, Ser. No. 732,179
Int. Cl. B65g *57/00*
U.S. Cl. 198—35 **38 Claims**

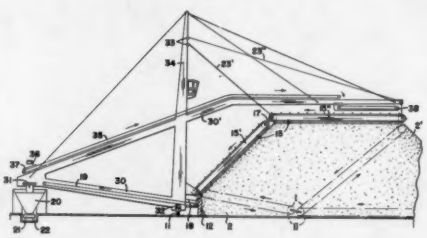


Bakery product units are received from a depanner and/or slicer at a marshaling station in two discrete rows. Product units from the two rows are then released in a controlled manner and are advanced in timed relation with or without inversion of the units in one or both rows. The product units in one row move gradually into superposed relation with corresponding product units of the second row and each superposed pair of product units is then engaged and advanced in unison until stacked registering relationship of each superposed pair is attained.

3,596,748
CONVEYOR UNLOADING APPARATUS

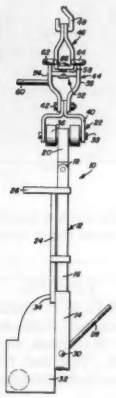
Gerhard Julius Konrad Fischer, Kirchhoeder Berg, Germany, assignor to Gustav Schade Maschinenfabrik, Dortmund, Germany

Division of Ser. No. 713,535, Mar. 15, 1968, Pat. No. 3,509,985
Filed Nov. 5, 1969, Ser. No. 874,310
Int. Cl. B65g *65/28*
U.S. Cl. 198—36 **3 Claims**



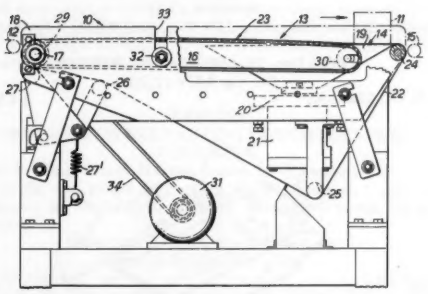
Unloading apparatus in which an articulated conveyor pivots about a central axis to pickup material heaped circumferentially around the axis and to discharge said material at said central axis.

3,596,749
POULTRY GRADING POSITIONER
William F. Altenpohl, Jr., and Paul J. Altenpohl, both of West Conshohocken, Pa., assignors to W. F. Altenpohl, Inc.
Filed Mar. 20, 1969, Ser. No. 808,941
Int. Cl. B65g *43/00*
U.S. Cl. 198—38 11 Claims



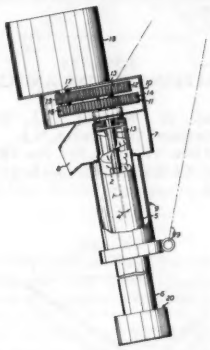
A poultry carrying frame is suspended from a conveyor for angular positioning at a grading station and automatic reorientation to an unloading position as it is moved away from the grading station by the conveyor. The carrier frame is swivelly mounted by a link member pivotally connected between a load transferring roller assembly and the conveyor connector. A positioning arm and camming elements project from the link member for engagement by stationary elements during movement of the conveyor to effect said automatic reorientation operationally realigning the carrier frame with a release mechanism.

3,596,750
BELT CONVEYORS
Anthony L. Hendon, West Horsley, Surrey, and Christopher Richards, Horsham, Sussex, both of, England, assignors to Telomex Group Limited, Horsham, Sussex, England
Filed Dec. 5, 1968, Ser. No. 781,341
Int. Cl. B65g *69/00*
U.S. Cl. 198—39 15 Claims



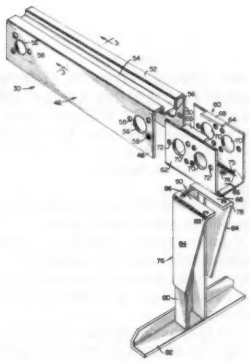
A belt conveyor especially designed for use in high speed weighing and comprising a carrier belt powered by a drive belt or belts in contact with part of the operative run of the carrier belt. In combination with a weighing platform the drive belt bypasses the platform and the carrier belt carries articles for weighing over the platform at a low tension.

3,596,751
DEVICE FOR SUPPLYING MATERIAL TO THE ENTRANCE END OF A CONVEYOR COMPRISING A SCREW AND A CONDUIT THEREFOR
Olle Lennart Siwersson, Gartnergatan 4, 252 51 Halsingborg, and Karl Gunnar Tell, Malmogatan 3, 252 49 Halsingborg, both of, Sweden
Filed Jan. 7, 1969, Ser. No. 789,583
Claims priority, application Sweden, Jan. 17, 1968, 588
Int. Cl. B65g *33/20, 47/16*
U.S. Cl. 198—64 14 Claims



A device for supplying or drawing material to the entrance end of a screw conveyor has a guide surface which is rotatable about the longitudinal axis of the conveyor independently of the screw thereof, and the guide surface is in the form of a helically or spirally coiled vane in an open cap formed by said guide surface around the entrance end of the conveyor.

3,596,752
MODULAR SUPPORTING STRUCTURE FOR ENDLESS BELT CONVEYORS
Francis J. Garvey, Newfield, N.J., assignor to Garvey Products Corporation, Hammonton, N.J.
Filed Dec. 18, 1968, Ser. No. 784,591
Int. Cl. B65g *15/60*
U.S. Cl. 198—182 6 Claims



The modular supporting structure for an endless belt conveyor, or a system of such conveyors, comprises component units including tubular bed modules, adapters for interconnection of the modules to one another and to various related structures, and certain ancillary components, including drive and transfer apparatus.

3,596,753
HEAT-RESISTANT CONVEYOR BELT

Heinrich, Philipp, Knapp; Gerda, Elsbeth, Schanz, and Regina, Regina renate, Hansel, all of Bad Blankenburg, Thuringian Forest, Germany, assignors to VEB Transportgummi, Bad Blankenburg, Thuringian Forest, Germany

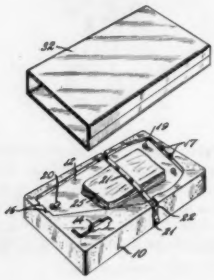
Filed Aug. 1, 1968, Ser. No. 749,342
Int. Cl. F16g *1/12, 5/10*
U.S. Cl. 198—193 **4 Claims**

Heat-resistant conveyor belt consisting of an elastomer mixture with steel wire supporting inserts, the elastomer mixture consisting of nitrile rubber and polychloroprene with the nitrile rubber contents exceeding 50 percent; preferably an adhesive soluble in the elastomers is incorporated in the elastomer mixture.

3,596,754
COMBINATION SHIPPING AND CARRYING CONTAINER

Glen R. Peterson, Jr., Summit, N.J., assignor to Oscar Schmidt-International, Inc., Union, N.J.

Filed Dec. 11, 1968, Ser. No. 782,880
Int. Cl. B65d *85/54;* **A45c** *11/00*
U.S. Cl. 206—14 **3 Claims**



A combined shipping and carrying package for a stringed musical instrument of the zither type having strings on one face thereof, said package comprising a molded cellular body having a recess for the reception of the musical instrument in inverted position, a fitted cover for said body with closure means and a handle for selectively carrying the body and contained musical instrument, said fitted cover being foldable for reception within said recess together with the musical instrument during shipping, and a disposable shock-resistant wrapper for enclosing said body and contents during shipping.

3,596,755
METHOD AND APPARATUS FOR SHIPPING FLAT GLASS WITHOUT PACKING CASES

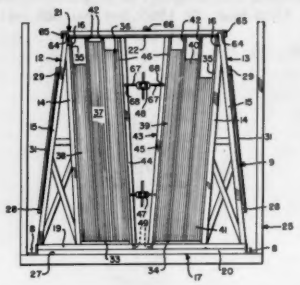
Albert J. Bundy, and James L. Williams, both of Kingsport, Tenn., assignors to ASG Industries, Inc., Kingsport, Tenn.

Filed Dec. 17, 1968, Ser. No. 784,370
Int. Cl. B65d *85/48*
U.S. Cl. 206—62 R **9 Claims**

A mass of flat glass sheets is divided into two sections standing in edgewise nearly upright position. The outer face of each section is given lateral support at a small angle to the vertical, and substantially uniform pressures are applied in opposite directions to the adjacent inner angular faces of the two sections. This strengthens the laminated columnar structure of each section.

The lateral support for the outer faces of each of the last two sections is provided by narrow A-frames which are arranged in pairs with the A-frames of each pair opposite one another.

A central angular spacing framework or adjustable wedge-shaped locking device is placed between the inner faces of the two sections of standing glass sheets and these are forced apart by turnbuckles or the like which form part of the locking device. The shipping framework as described is assembled in a truck trailer or railroad car. The framework may also be assembled in a "container" such as is shipped either by flat car or by steamship. It will be understood that the term "trailer" or the term "railroad car" as used in this

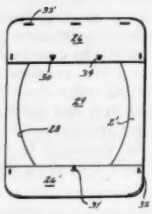


specification is to include such a container and that the term "car" includes each of these three terms.

3,596,756
DISPLAY PACKAGE FOR MIRRORS AND THE LIKE

Bernard Nathan, and Gary L. Tate, both of Vincennes, Ind., assignors to Hamilton of Indiana, Inc., Vincennes, Ind.

Filed July 9, 1969, Ser. No. 840,345
Int. Cl. B65d *85/48*
U.S. Cl. 206—62 **2 Claims**

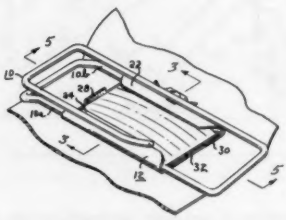


A display package for a flat article, such as, a mirror, picture, decorative panel, and the like, which package is constructed from a single blank of sheet material having a central panel and a pair of foldable, opposed end panels. The central panel is provided with an opening for receiving the particular article; said end panels being adapted for disposition against the rear face of the article and detachably secured thereto.

3,596,757
MONEY CLIP

Patrick T. Cocchiaraley, 350 Wayland Road, Cherry Hill, N.J.

Filed Dec. 29, 1969, Ser. No. 888,358
Int. Cl. A45c *11/28*
U.S. Cl. 206—.81 **3 Claims**



A coin-holding device for holding a limited number of coins, mounted within the framework of a paper money clip of the type having a rectangular helix of spring wire functioning to securely hold paper money certificates. The housing of

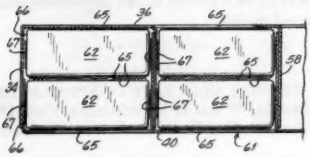
the coin holder contains a resilient bowed plate which serves as a biased element to securely hold coins placed in the housing between the top of the housing and the plate. The housing encloses two legs of the money clip in such a manner that the money clip and the coin holding device may be operated independently of each other and without interfering with one another.

3,596,758

CARTON, CIGARETTE PACKAGE, AND CARTON FILLED WITH CIGARETTE PACKAGES

Floyd L. Phillips, Jr.; Edward J. Monahan, and Julian R. Martin, all of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed June 4, 1969, Ser. No. 830,304
Int. Cl. B65d *5/48, 25/04, 85/10*
U.S. Cl. 206—48.5 **7 Claims**



Cigarette carton containing packages of cigarettes having a diameter smaller than the standard, but nevertheless adapted to cooperate with conventional tax-stamp-applying apparatus constructed to fit carton and packages of standard diameter cigarettes.

The carton is formed from an elongated blank including opposing top and bottom panel-forming flaps, opposing end panels, and opposing side panels. Each side panel has four rectangular spaced flaps, each cut along three sides from the middle of the panel and hinged along the fourth side to the panel. The flaps of each side panel extend toward the opposing side panel. Pairs of flaps are aligned and secured together in completely overlapping relationship to form four partitions. The carton is thus divided into five compartments and a portion of the internal longitudinal dimension between the end panels of the carton is taken up by the four partitions.

Two packages of cigarettes may be located within each compartment. Each package is covered with material including embossed areas substantially covering its narrow longitudinal faces and at least about two horizontal margins of its wide longitudinal faces, to increase the external dimensions of the package so that a pair of packages substantially fills one compartment of the carton.

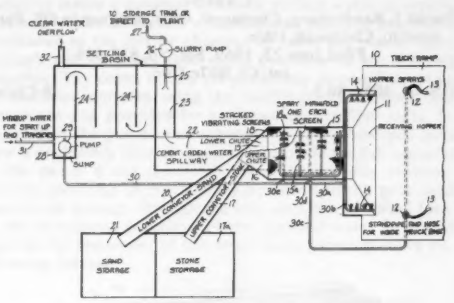
3,596,759

PROCESS FOR RECLAIMING CONSTITUENTS OF CONCRETE

John P. King, North Haven; James M. Kowolenko, Jr., Uncasville, and Ralph K. Safford, Guilford, all of, Conn., assignors to The Alfred B. King Company, North Haven, Conn.

Filed Oct. 7, 1969, Ser. No. 864,462
Int. Cl. B03b *7/00, 3/00*
U.S. Cl. 209—2 **12 Claims**

A process for reclaiming sand and gravel from a fluid concrete mixture, comprising adding water to the mixture to form a slurry and transferring the slurry to at least one gravel screen for separating the gravel therefrom and allowing the sand and cement slurry to pass therethrough. The sand and cement slurry is then transferred to a sand screen for separating the sand from the slurry and permitting the cement slurry to flow through The cement is separated from the slurry by settling in a basin or tank and the clear water is recycled so that it may be added to the fluid concrete mixture being processed, or the water may be discarded. The gravel and



sand are transferred by conveyor from their respective screens to storage bins for use in preparing concrete.

3,596,760

DEGRITTING OF ATTAPULGITE CLAY

Daniel Jacobs, Metuchen, and Herbert R. Hamill, Iselin, both of, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Division of Ser. No. 587,992, Oct. 20, 1966, Pat. No. 3,509,066.
Filed June 30, 1969, Ser. No. 870,116
1969, Ser. No. 870,116
Int. Cl. B03d *3/00;* **C10m** *7/02*
U.S. Cl. 209—5 **1 Claim**

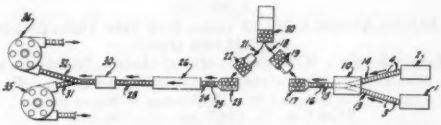
Grit is removed from attapulgite clay by dispersing the clay in water in the presence of tetrasodium pyrophosphate as a deflocculating agent and a material selected from the group consisting of hydratable magnesia, magnesium hydroxide, aluminum hydroxide and mixtures thereof as a viscosity reducing agent for the clay dispersions.

3,596,761

METHOD AND APPARATUS FOR HANDLING CANS OF DIFFERENT DIAMETERS

John Campbell, Kyabram, Victoria, Australia, assignor to Filper Corporation, San Ramon, Calif.

Filed Dec. 8, 1969, Ser. No. 883,067
Claims priority, application Australia, Dec. 13, 1968, 47764
Int. Cl. B07c *5/36*
U.S. Cl. 209—71 **24 Claims**



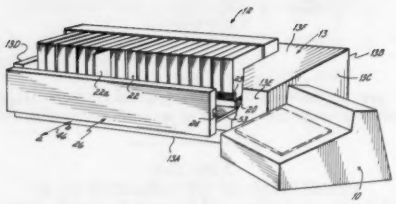
A method and apparatus for handling empty, cylindrical cans of different diameters, the method including the steps of supplying corresponding cans from different sources; telescopically combining cans of larger diameter with cans of smaller diameter; storing the cans so combined in the space required for only the larger diameter cans; separating the combined cans; conducting the separated cans to separate fillers, and the apparatus includes a can combiner and a can separator, the combiner comprising a pair of straight tracks on which the cans of different diameters are rollable at high speed toward the convergent ends of the tracks past a rotary aligner that axially aligns each can of larger diameter with a can of smaller diameter as the tracks join to move them to fully telescoped relation, and the can separator comprises endless belts extending along divergent paths respectively engaging the cans at the convergent ends of the belts to carry the larger diameter cans along one path from said convergent ends and the smaller diameter cans along a different path, for movement of the cans to separate fillers.

3,596,762

MAGNET SHIFTING MECHANISM FOR RETRIEVAL SYSTEM UTILIZING MAGNETICALLY RESPONSIVE CARDS

Daniel J. Bandenburg, Cincinnati, Ohio, assignor to OK Partnership, Cincinnati, Ohio

Filed June 23, 1969, Ser. No. 835,589
Int. Cl. B07c *5/06*
U.S. Cl. 209—80.5 **8 Claims**



This invention relates to card retrieval systems of the type in which card selection from a deck of similar cards which are magnetically responsive and randomly stored in vertical face-to-face relation is effected by laterally shifting, under the force of a movable magnet, one or more of the stored cards while restraining against movement the undesired cards, thereby physically separating the desired cards from those not desired. More particularly, this invention relates to a magnet-shifting method and apparatus useful in systems of the type described which reduces the breakaway, or maximum, force which must be applied to the magnet before it can become disengaged from the undesired cards and, by further movement, increase the separation between the desired and undesired cards.

3,596,763

AMINE-AMIDE COLLECTORS FOR THE TREATMENT OF POTASH ORES

Robert Berthon, Wittelsheim; Michel Mames, Ensisheim, and Jean-Pierre Zimmerman, Cormeilles-en-Parisis, all of, France, assignors to Mines De Potasse, D'Alsace S.A.

Filed Dec. 28, 1967, Ser. No. 694,071
Claims priority, application France, Jan. 6, 1967, 90,131
Int. Cl. B03d
U.S. Cl. 209—166 **14 Claims**

A collector composition especially suitable for the coarse flotation of sylvinite comprising: (A) at least about 90 percent by weight of a primary aliphatic amine of 16—18 carbon atoms, or water soluble salts thereof; and (B) about 0.5—10 percent by weight of a primary aliphatic amide of 10—20 carbon atoms.

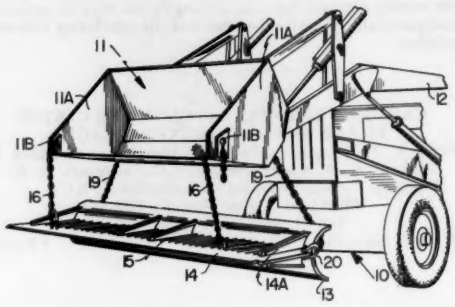
3,596,764

SCRAPER-SIFTER DEVICE

Wedad J. Smith, El Paso, Tex., assignor to Wrex-All Implements, Inc., Thibodaux, La.

Filed May 5, 1969, Ser. No. 821,806
Int. Cl. B07b *1/28*
U.S. Cl. 209—421 **1 Claim**

The present disclosure is directed to a scraper-sifter device having a concavo-convex backing trowel member having a front scraper and an intermediate sifter section between the scraper and backing member. Flexible connections are provided on the device to permit attachment to a front end



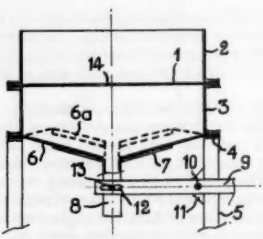
loader bucket or attachment to the implement draft device of a conventional tractor.

3,596,765

DENSITY SEPARATION APPARATUS

Leonel L. Beudin, 74 Rue de la Federation, Paris 15, and Roger O. Cuvillier, 69, Rue Henri-Barbrusse, 92 Nanterre, both of France

Continuation-in-part of application Ser. No. 682,440, Nov. 13, 1967, now abandoned. This application Oct. 31, 1969, Ser. No. 873,767
Int. Cl. B03b *3/22*
U.S. Cl. 209—456 **12 Claims**



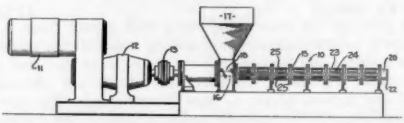
A density separation jig that combines vertical and horizontal liquid force components to separate the end product at the center of the grid. The frequency of the diaphragm is controlled to produce the horizontal force component and establish maximum separation. The grid can comprise various zones of mesh to take advantage of the horizontal separation. The discharge chute can be transparent and the jig components designed for easy portability.

3,596,766

SCALE INHIBITION

Donald P. Johnston; Paul J. Stone, and Jules Lee Magnon, all of Houston, Tex., assignors to National Lead Company, New York, N.Y.

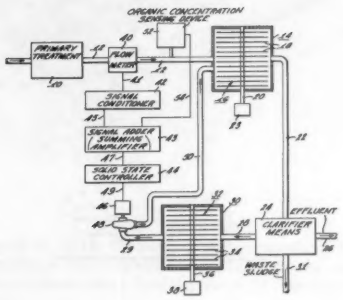
Filed Mar. 28, 1969, Ser. No. 811,462
Int. Cl. C02b *5/06*
U.S. Cl. 210—58 **4 Claims**



Potato starch, with or without an admixture of cellulose, is carboxymethylated by kneading, as in a dough mixer or ex-

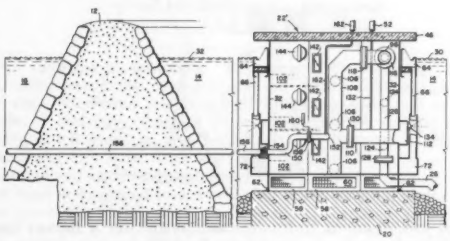
truder. The product is an excellent scale inhibitor for aqueous systems, being superior to other carboxymethylated starches.

3,596,767
SEWAGE TREATMENT APPARATUS
Ronald L. Antonie, Milwaukee, Wis., assignor to Autotrol Corporation, Glendale, Wis.
Filed Feb. 11, 1969, Ser. No. 798,381
Int. Cl. C02c *1/10*
U.S. Cl. 210—96 **1 Claim**



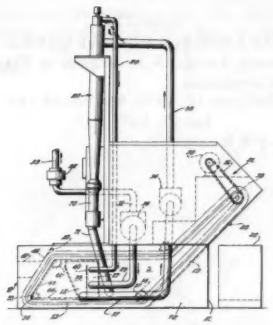
A sewage treatment apparatus and method comprising a biological treatment tank, preferably including rotatable biological contactor means therein. Means are provided for sensing the hydraulic flow rate in the system and also for sensing the organic concentration of the sewage or of the effluent, and for recycling secondary sludge to the biological treatment tank as a function of the hydraulic flow rate and of the organic concentration.

3,596,768
APPARATUS FOR WATER PURIFICATION
George R. Whitten, Jr., 2033 Mendon Road, Cumberland, R.I.
Filed Oct. 10, 1969, Ser. No. 865,269
Int. Cl. B01d *35/26*
U.S. Cl. 210—167 **10 Claims**



A reservoir of purified water is prepared from a natural body of water by constructing a prefiltering levee through the water to segregate the reservoir area from the remainder of the water body, pumping water from the reservoir area into the remainder, cleaning the floor of the reservoir area if necessary, installing a water purification unit in the reservoir, and then allowing the water to filter through the levee from the remainder of the water body into the reservoir for continuous further purification and recirculation by the installed unit. The water purification unit includes a mixing chamber, a filtering chamber, skimming means for intaking surface water into the mixing chamber, submerged inlets for intaking water into the mixing chamber from below the water's surface, a pump for passing water from the mixing chamber through the filtering chamber, and outlet means for passing the filtered water directly back to the reservoir. The preferred skimming means comprises a mobile skimming gutter to insure a constant intake of surface water at various reservoir water levels and a submersible pump is preferably positioned in the mixing chamber to force the mixed water through one or more filter cells provided in the filtering chamber. The outlet means are preferably disposed to set up recirculation currents using the earth's rotation effect, and means are also provided for backwashing the filter cells. To insure that the pump does not run dry the submerged inlet flow is preferably float modulated to provide the full capacity of the pump if the skimmed flow is temporarily reduced. Various purifying chemicals may be added to the processed water in its passage through the unit, and in a modified form of the invention, a portion of the purified water is passed back to the remainder of the water body for progressive purification thereof.

3,596,769
FILTER FOR COOLANT OILS FOR CUTTING TOOLS
Dan D. Baldwin, Mundelein, Ill., assignor to Thermel Incorporated, Franklin Park, Ill.
Continuation of application Ser. No. 800,419, Feb. 19, 1969, now abandoned. This application May 4, 1970, Ser. No. 48,791
Int. Cl. B01d *21/26*
U.S. Cl. 210—298 **10 Claims**

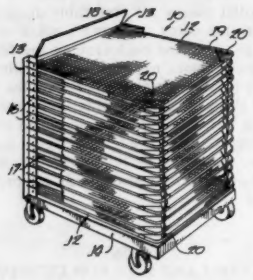


Recirculating filter for coolant oils for cutting tools including a main coolant tank having a liquid-separating tank disposed within and extending across the main tank to separate the first tank into an active zone along a dirty coolant inlet into the main tank on one side of the liquid separating tank and a settling zone on the opposite side of the liquid-separating tank. The liquid-separating tank has a dirty coolant area in communication with the active zone of the main tank and a clean coolant area separated from the dirty coolant area by a partition. A cyclone discharges clean liquid from its top into the clean coolant area of the liquid-separating tank and discharges solid particles and entrained oil into a barometric leg having communication with the settling zone of the main tank. An air inlet leads onto the barometric leg behind the apex of the cyclone. The Venturi action of the liquid and solid particles discharging through the apex of the cyclone, draws air through the air inlet to balance the liquid and solids discharging from the cyclone, and prevent the solid particles and liquid from building up into the cyclone. Swarf-controlled grates cooperate with a drag conveyor in the active zone of the main tank to reduce the floating swarf and cause it to be carried away by the drag conveyor.

3,596,770
DRYING RACK AND SUBASSEMBLIES THEREOF
Erwin Heinrich, 710 N. Highland Ave., Arlington Heights, Ill.
Filed Sept. 23, 1968, Ser. No. 761,513
Int. Cl. A47f *5/12*; **F26b** *25/10, 25/18*
U.S. Cl. 211—150 **10 Claims**

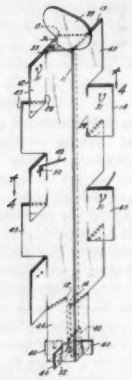
A drying rack including a plurality of horizontally disposed, overlying trays adapted to pivot about one end and

a spacing means connected to the other end of the trays comprising a supporting means, clamping means disposed on the



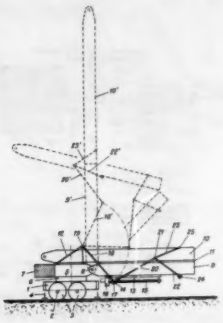
supporting means for attaching the spacing means to a tray, and a foot depending from the supporting means for spacing the tray from the next underlying tray.

3,596,771
COLLAPSIBLE DISPLAY DEVICE
John H. Wuensch, Leonia, N.J., assignor to Einson-Freeman & De Troy Corporation
Filed June 10, 1970, Ser. No. 45,144
Int. Cl. A47f *5/10*
U.S. Cl. 211—178 R **11 Claims**



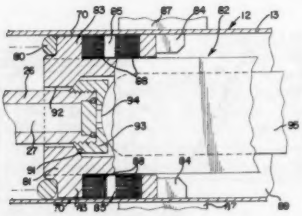
Two panels of foldable sheet material, which may be integral, can be arranged flat against each other in collapsed condition. Each panel has a main fold line along which it can be folded away from the other panel, and at least one supplementary fold line foldable in a direction opposite to its respective main fold line. When erected, by folding along these fold lines, the device includes a hollow post and wings projecting from the post. The panels may have transverse slits separating adjacent wings so that the latter can extend in different directions. A rigid member introduced between the main fold lines of the panels may keep the post in erect condition. Merchandise-holding means may be mounted on the wings.

3,596,772
TOWER CRANES
Pierre Joseph Pingon, 5, Avenue du Parmelan, Annecy (Haute Savoie), France
Filed Aug. 1, 1969, Ser. No. 846,792
Claims priority, application France, Aug. 30, 1968, Dec. 24, 1968, 164,641;180,317
Int. Cl. B66c *23/62*
U.S. Cl. 212—46 **16 Claims**



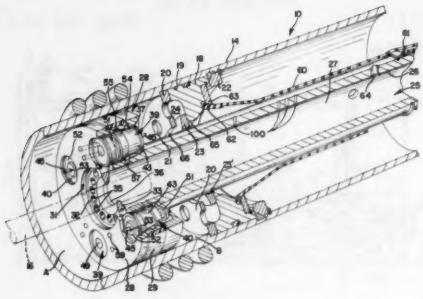
A slewable tower crane comprises upper and lower hinged mast elements, the lower of which carries a carriage reciprocated by a screw jack. The carriage is connected by rods to a fixed portion of the slewable superstructure of the crane, and by a toggle system to the upper and lower mast elements, so that operation of the screw jack raises and lowers the mast elements with a folding action. The upper end of the upper mast element hingedly carries a horizontal jib comprised of two telescoping sections.

3,596,773
HYDRAULIC DRAFT GEAR AND CUSHIONING UNIT
William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Filed Feb. 14, 1969, Ser. No. 799,175
Int. Cl. B61g *9/04, 9/12*
U.S. Cl. 213—8 **14 Claims**



A double-acting hydraulic cushion unit for a railway car which is formed with a hydraulic-fluid-filled cylinder having a closed end and an open end afforded by an apertured cylinder head. A piston assembly is disposed for relative reciprocating movement within the cylinder and includes a piston rod which slidingly moves through the cylinder head. The unit is provided with a flexible accumulator boot connected to the cylinder head and to the piston rod to close the open end of the cylinder. A metering means comprises a metering pin on the cylinder which cooperates with a slidable orifice plate in the piston, the orifice plate having one position in buff impact and another position on the return stroke of the piston assembly to facilitate the transfer of fluid from one side of the piston head to the other. A fluid-pressure-responsive valve means is movably disposed in a chamber contiguous with the accumulator to a position overlying passages communicating with the accumulator and to a position clear of said passages. The fluid-pressure-responsive

valve is designed to also restrict the flow of fluid from one side of the piston during the return stroke of the piston and upon a draft impact stroke to cushion said impact. The piston rod also includes metering openings also serving on the



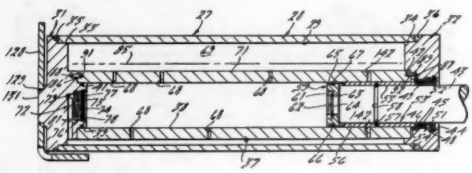
return stroke to meter the fluid to the accumulator boot. In one embodiment relief valves are provided in the piston to open upon predetermined fluid pressures on opposite sides of said piston.

3,596,774

DIRECT-ACTING HYDRAULIC PNEUMATIC DEVICE

William K. MacCurdy, Plymouth, Mich., assignor to Evans Products Company

Filed Apr. 1, 1969, Ser. No. 811,958
Int. Cl. B61g *9/08; B61g 9/12; B61g 11/12*
U.S. Cl. 213—8 **8 Claims**



A railway-car-cushioning arrangement embodying a hydraulic pneumatic cushioning device interposed between the car underframe and couplers. The cushioning unit includes a hydraulic dashpot from which fluid is displaced under shock loadings, the loads being transmitted to the cushioning unit from draft lugs interposed between the underframe and a sliding sill of the car that carries the couplers. The fluid is displaced into a reservoir in which a high-pressure gas is contained which gas is in direct contact with the fluid. The gas is at a sufficiently high pressure so as to act as a fluid when compressed and which exerts a restoring force on the cushioning unit when the loads are relieved.

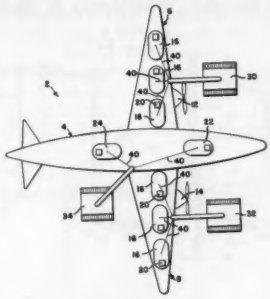
3,596,775

AIRCRAFT LIFTING SYSTEM AND APPARATUS

Edward E. Ingraham, 22 Green Hill Lane, R.F.D. 5, Huntington, N.Y.

Filed June 11, 1969, Ser. No. 832,063
Int. Cl. B66c *23/18*
U.S. Cl. 214—1 R **8 Claims**

A system is disclosed for lifting and moving aircraft. One or more vacuum support units are attached to top surfaces of airplane wings in such a manner as to distribute lifting forces to the wing frame structure in a manner corresponding to the supporting forces exerted to the wings when the airplane is in flight. The aircraft is thereby lifted in an efficient and dependable manner without imposing objectionable stresses upon any of the components or parts. The invention is particularly adapted to retrieving and/or moving aircraft which is damaged or is disabled so that it cannot move itself.

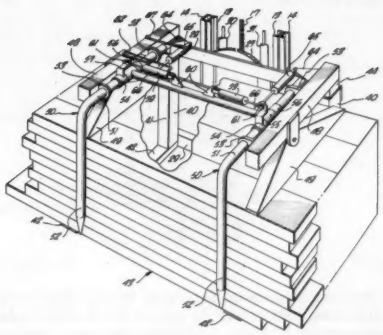


3,596,776

FORKLIFT TRUCK WITH A LOAD-SQUARING APPARATUS

Thomas N. Melin, 1424 24 Ave., Longview, Wash.

Division of Ser. No. 609,973, Dec. 6, 1966, Patent No. 3,376,985, which is a continuation-in-part of Ser. No. 401,594, Oct. 5, 1964, abandoned. Filed Nov. 8, 1967, Ser. No. 704,196
Int. Cl. B66f *9/18*
U.S. Cl. 214—6 S **12 Claims**



The invention encompasses apparatus for rendering coplanar the end surfaces of all the pieces of timber in a stack of lumber by placing the stack in near vertical position while subjected to slight lateral constraints, and then dropping (or its equivalent) the stack endwise to a foundation to produce a vertically effective impact upon the stack sufficient to cause the various timbers to move longitudinally relative to each other against the friction between the timbers, thereby to move the lower ends of all the timbers into a common plane. The stack is then returned to a horizontal position in such a manner that the timbers do not move longitudinally relative to each other.

3,596,777

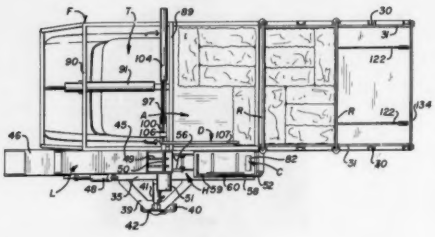
BALING CHAMBER FOR BALE-STACKING APPARATUS

Allan B. Neely, Jr., P. O. Box X, Limon, Colo.

Continuation-in-part of application Ser. No. 719,411, Apr. 8, 1968, now Patent No. 3,523,616. This application Oct. 30, 1969, Ser. No. 872,660
Int. Cl. B65g *57/22*
U.S. Cl. 214—6 **12 Claims**

The apparatus disclosed herein is a bale-collecting and stack-forming apparatus adapted to be carried upon a truck or a similar vehicle. A conveyor at the side of the truck picks

up bales and elevates the same to a dispensing chamber at the side of and above the bed of the truck. An assembly platform alongside the dispensing chamber overlies the bed of the vehicle and bales are moved from the chamber onto the platform. The movement of bales from the chamber onto the



platform is by swing arms and by a paddle which arranges the bales in longitudinal, transverse patterns to form a stack layer on the platform. Once the platform is loaded with a bale stack layer, it is actuated to move the bale stack layer onto a bale stack carrier on the vehicle. Subsequently, the bale stack, when it is completed, is removed from the carrier.

3,596,778

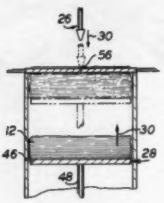
CLOTH-BLANK-STACKING APPARATUS

Joseph C. Lamonica, Garfield; Timothy Troast, Pompton Lakes, and Marinus Troast, Jr., Little Falls, all of, N.J., assignors to I. C. Herman & Co., Inc., New York, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,177

Int. Cl. B65g *57/06*

U.S. Cl. 214—6 H **3 Claims**



A stacking apparatus for cloth blanks successively fed, one-at-a-time, into a stacking station. Each blank is deposited on horizontally movable opposing members, then in closed position at the station. Another pair of opposing members, arranged for vertical movement, then close from clearance positions upon the deposited blank, the upper member to hold the cloth blank and the lower member to receive the same when the horizontally movable members are withdrawn from beneath the blank.

3,596,779

BAG COLLATING AND STACKING APPARATUS

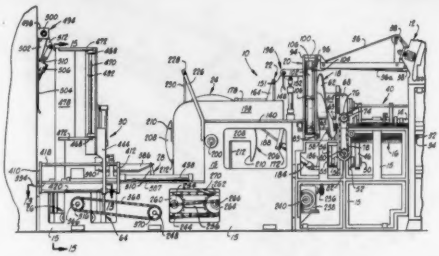
William B. Osteen, Camden, Ark., assignor to Davis Machine Corporation, Camden, Ark.

Filed Apr. 14, 1969, Ser. No. 815,737

Int. Cl. B65g *57/30*

U.S. Cl. 214—6.5 **38 Claims**

Apparatus for collating and stacking bags in vertically superimposed hands, the apparatus including a conveyor for receiving aligned bags from a bag forming machine and moving them in consecutive sequence away from the forming machine. A pair of spiral augers cooperate with the conveyor to periodically remove a preselected number (hand) of aligned bags therefrom and convey these bags into a turntable assembly. The turntable assembly periodically turns to alternate positions to face the bottoms of the bags first in one direction, and then in an alternate direction. A mechanism then forces the bags from the turntable assembly onto a tilting box assembly. This assembly tilts through an angle to move the bags from a vertical status to a horizontal status. Pushing mechanism then pushes the bags from the tilting box assembly into a rotating unit assembly which, upon actuation, delivers the bags to a transfer unit which conveys each successive hand of bags into a bag lifter assembly. The bag lifter assembly periodically lifts a stack of vertically superimposed



hands of bags upwardly to permit a new hand to be delivered beneath the stack by the transfer unit, and then the lifter assembly lowers the lifted stack onto the new hand. Finally, after the stack of bags within the bag lifter assembly has come to contain a desired number of hands, a banding press loader assembly is automatically actuated to load the stack of bags from the lifter assembly into a banding press.

3,596,780

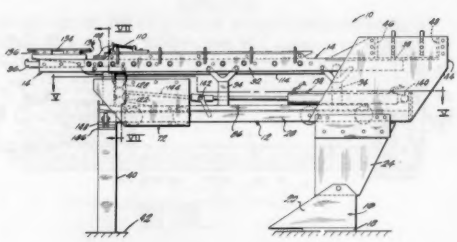
PALLET FEED AND LOCATOR APPARATUS

Milo G. Balhorn, Waterloo, Iowa, assignor to Go Corp., Inc., Adrian, Mich.

Filed Dec. 15, 1969, Ser. No. 885,238

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 A **17 Claims**

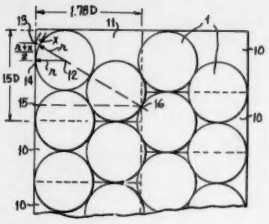


Apparatus for feeding pallets and locating them under the mold box of a concrete block-making machine. The apparatus is a self-contained unit that is self-supporting and can be mounted on the supporting surface for the block-making machine so as to be completely independent of any structural part of the block-making machine. A main or stationary frame is provided on which a movable frame is supported for longitudinal movement. The stationary frame has a pallet magazine at its rearward end and a guide track at its forward end. The movable frame has an upper surface, the rearward end of which is adapted to slide under the magazine, and the forward end of which terminates in pallet support fingers. The movable frame and the pallet magazine cooperate during reciprocal movement of the movable frame to translate successive pallets in series from the magazine to the support fingers. A prime mover in the form of a hydraulic cylinder is provided to reciprocate the movable frame. Locator arms are pivotally connected to the movable frame and are connected to the guide track and the hydraulic cylinder so that the latter performs the additional function of raising the arms so as to lift a pallet from the support fingers upwardly for engagement with the underside of a mold box during the forward movement of the movable frame relative to the main frame.

3,596,781
METHOD AND APPARATUS FOR ASSEMBLING CYLINDERS IN A MINIMUM SPACE, AND PRODUCT OF THAT METHOD AND APPARATUS

Jerry Fred Burton, Box 198-A, Rte. 8, Lexington, N.C.

Filed Feb. 27, 1969, Ser. No. 802,775
Int. Cl. B65g 1/20
U.S. Cl. 214—10-5R 14 Claims



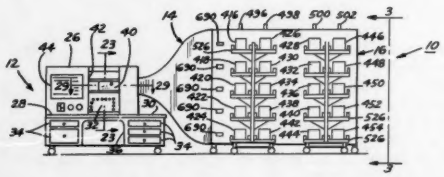
The method and apparatus for assembling, e.g., for storage or for transportation, right circular cylinders, e.g., tobacco hogsheads, in a minimum space. The cylinders are placed on end and are aligned in adjacent rows so that each cylinder is tangent to two cylinders in each adjacent row. If so aligned, the horizontal lines connecting the cylinder axes of any three tangent cylinders intersect at angles of 60°.

Pallet structures are disclosed which assist in aligning the cylinders according to the invention, and which also assist in distributing the load between tiers of stacked cylinders, so as to make the stack more stable. Particular dimensions for the pallets, related to the cylinder diameters, are disclosed, together with particular methods of arranging the pallets under one or more tiers of cylinders.

3,596,782
SORTING APPARATUS

William Whitby Morris, Sr., Silver Spring, Md., assignor to Lon H. Romanski, Detroit, Mich., a part interest

Filed Feb. 25, 1969, Ser. No. 802,061
Int. Cl. B65g 47/46
U.S. Cl. 214—11 34 Claims

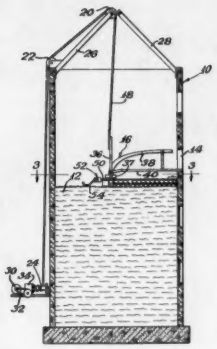


A mail-sorting apparatus having an operator's console equipped with key-operated switches has a selector section positioned intermediate a mail-propelling device and a diverter section which includes sorted mail receiving trays; operation of any of the key switches causes a particular related channel or chute to be formed in the selector section and a particular related diverter door to be opened in the diverter section so as to present one path which that item of mail must follow to the desired receiving tray; operation of an other of the key switches causes the establishment of another particular related path for the item of mail to follow to another mail-receiving tray.

3,596,783
AUTOMATIC LOWERING DEVICE FOR SILO UNLOADER

Donald M De Bower, and Peter M. Warfield, both of Cedar Falls, Iowa, assignors to Clay Equipment Corporation

Filed Jan. 5, 1970, Ser. No. 707
Int. Cl. B65g 65/38
U.S. Cl. 214—17 DB 3 Claims

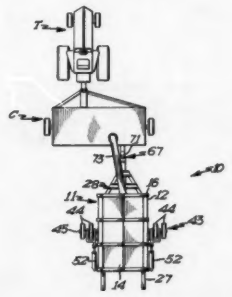


An automatic lowering device for a silo unloader. The unloader includes an auger adapted to travel concentrically about a single support cable suspended from the top and center of the silo. the auger extends from the center cable support to the wall of the silo with the outer end of the auger being supported by the silage in the silo. Extending in the opposite direction from the center cable support is a control mechanism. The control mechanism includes a foot which senses the distribution profile of the silage in the silo and operates a limit switch whenever the silage forms a steeply sided cone.

3,596,784
HAYSTACK-FORMING DEVICE

Harward G. Hanson, Wolverton, Minn.

Filed Dec. 3, 1969, Ser. No. 881,697
Int. Cl. B65g 67/22
U.S. Cl. 214—42 A 8 Claims



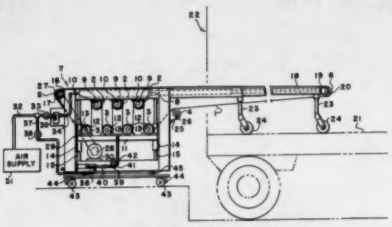
A mobile-towed-type haystack-forming device, for forming chopped hay into stacks, and which includes a wheel-supported housing given rear closure means for closing the open rear end thereof. A floor structure is slidably mounted on the housing and is slidable forwardly from a closed position to an opened position to open the lower end of the housing so that when the rear closure means is also opened, chopped hay within the housing will be deposited on the ground in a stabilized stack form.

3,596,785

DEVICE FOR LOADING AND UNLOADING OBJECTS

Tom M. Weatherford, Jr., 3726 Holliday Circle, Dallas, Tex.

Filed July 10, 1969, Ser. No. 840,710
Int. Cl. B65g 15/26
U.S. Cl. 214—89 18 Claims



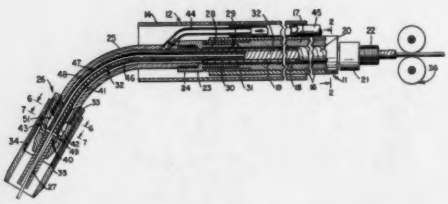
A telescoping continuous conveyor belt assembly is mounted in a compact unit. Wheels may be provided for portability to load and unload heavy objects from trucks and other vehicles. The device telescopes into a trailer or other remote location from a point outside the vehicle to be loaded or unloaded or removed from the remote location. By using pneumatic or hydraulic cylinders opposing each other, the slack is kept out of the conveyor belt. Pneumatic or hydraulic cylinder operated scissor-type cradles may be provided at each end of the belt conveyor to raise or lower the objects being loaded or unloaded as the operator desires. The device may be arranged on a pivot. Pneumatic or hydraulic cylinders may be provided at the end of the conveyor which is extended within the vehicle or to the remote location to automatically move the end of the belt to one side of the vehicle or the other or along an arc at the remote location as desired.

3,596,786

DUAL-PURPOSE WELDING CABLE

Arthur A. Bernard, Beecher, and Richard A. Bernard, Flossmoor, both of, Ill., assignors to Dover Corporation, New York, N.Y.

Filed Dec. 4, 1968, Ser. No. 780,976
Int. Cl. B23k 9/00
U.S. Cl. 219—130 9 Claims



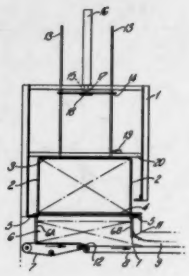
A dual-purpose welding cable having increased electrode size and welding current capacity without substantially increased cable diameter or weight. A flexible interior electrode conduit and readily removable flexible liner are provided, each in the form of a flexible tube formed of helically wound spring metal strip to have normally butted edges defining a seam which follows a helical path about the axis of the tube.

3,596,787

PRODUCTION OF STREAMS OF ARTICLES

Tom Rowlands, and William L. Sainsbury, both of London, England, assignors to Molins Machine Company Limited, London, England

Filed Jan. 28, 1969, Ser. No. 794,691
Claims priority, application Great Britain, Jan. 31, 1968, 4908/68
Int. Cl. B65g 65/42
U.S. Cl. 214—302 8 Claims



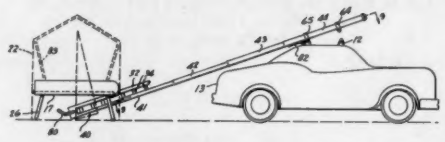
This invention is concerned with feeding a continuous stream of cigarettes or other rodlike articles from a hopper which receives successive batches of articles lying parallel and side by side. Apparatus according to this invention includes a pressure member arranged to extend between sidewalls of the hopper and to move through the hopper, in the direction of the sidewalls, so as to apply continuous pressure to the articles in the hopper while being constrained against tilting during movement through the hopper.

3,596,788

TELESCOPIC RETRACTING CAMPER

Allen R. Willie, 521 E. 12th Ave., Anchorage, Alaska

Filed Dec. 12, 1969, Ser. No. 884,677
Int. Cl. B60r 9/00
U.S. Cl. 214—450 10 Claims



A camping kit carried on luggage supports on top of an automobile. The kit is pivotally connected to one of the supports and has a telescopic frame which can be extended from the vehicle to the ground. The end section of the frame carries a platform provided with extensible legs so that it can be used as a bed. The platform is also provided with a tent which can be erected over the bed to form a shelter.

3,596,789

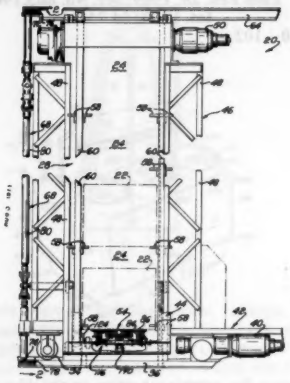
LOAD-HANDLING APPARATUS

Stephen F. Aaronson, Philadelphia; Alvin B. Garnich, Wrightstown, and Errick G. Morris, Philadelphia, all of, Pa., assignors to Eaton Yale & Town Inc., Cleveland, Ohio

Filed Apr. 1, 1969, Ser. No. 812,010
Int. Cl. B65g 65/02
U.S. Cl. 214—730 10 Claims

An improved stacker crane includes a shuttle assembly for depositing loads in storage racks or bins and for retrieving the loads from the bins. The shuttle assembly is extendible from a retracted condition to either one of two opposite extended conditions. When the shuttle assembly is operated between the extended and retracted conditions, an inter-

mediate section of the shuttle assembly is moved through a first distance at a first speed relative to a base section of the shuttle assembly. Simultaneously therewith, a load-supporting section of the shuttle assembly is moved relative to the intermediate section through a second distance which is



greater than the first distance at a second speed which is greater than the first speed. A shock absorber assembly is provided for retarding movement of the shuttle assembly when it approaches the retracted condition or either one of the extended conditions.

3,596,790

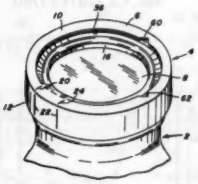
CLOSURE ASSEMBLY

Charles J. Leftault, Jr., Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed June 11, 1969, Ser. No. 832,317

Int. Cl. B65d *43/02, 23/00, 41/10*

U.S. Cl. 215—46 A **10 Claims**



A closure assembly comprising a unitary frangible outer closure member and a liner member disposed within the closure member. The outer closure member having a top panel provided with an annular top panel portion and an inner top panel portion. The inner top panel portion having a recessed integrally formed ring pull tab connected to the annular top panel portion by means of an upwardly and radially outwardly directed connector portion. The integral ring pull tab is disposed radially inwardly of the annular top panel portion and at a level spaced below the plane of the annular top panel portion. The inner and outer edges of the ring pull tab are curled downwardly and transversely inwardly. The liner member has a panel with a diameter at least as great as the inner diameter of the annular top panel portion and it defines an upwardly open recess for receiving the integral ring pull tab. The liner may have a skirt which extends downwardly generally parallel to the skirt of the closure.

3,596,791

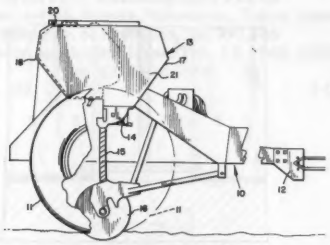
GRAIN DRILLS-LIQUID FERTILIZER TANK

Nils O. Olsson, Ancaster, Ontario, Canada, and Roy C. Anderson, Barrington, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 22, 1970, Ser. No. 5,066

Int. Cl. B65g *1/06;* **B65d** *25/02*

U.S. Cl. 220—20 **8 Claims**



An elongated removable liquid-dispensing tank for a grain drill hopper or the like adapted to store seed or dry fertilizer, is made of relatively rigid material and is adapted to be inserted through the top opening and to be fully enclosed in the hopper. The tank has at least one wall conforming to the shape of one of the walls of the hopper and divides the latter into separate compartments so that liquid and dry material can be simultaneously dispensed from the single hopper.

3,596,792

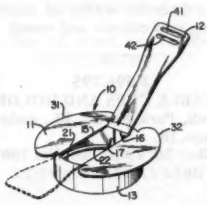
TEARAWAY CLOSURE FOR BEVERAGE CONTAINERS AND THE LIKE

Henry O. Wilcox, Denver, Colo., assignor to Denver Plastics, Inc., Lakewood, Colo.

Filed May 5, 1969, Ser. No. 829,165

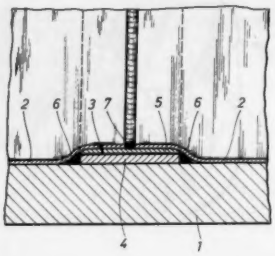
Int. Cl. B65d *17/00, 45/00*

U.S. Cl. 220—27 **6 Claims**



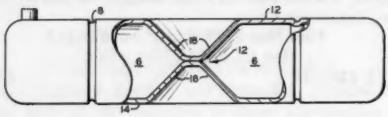
A tearaway flexible closure for openings in beverage containers such as beer kegs includes a top portion, pull tab projecting from the top portion and a flange portion depending from the top portion. The flange portion is closed throughout its circumferential extent and snugly embraces surfaces of the container associated with the opening and has a weakened section at the juncture of the tab and top portions and a pair of intermediate inwardly extending projections on each side of the weakened section to facilitate a tearaway action along shear lines across the top portion and one side of the flange portion. Depending ribs on the top portion extensions engage an outer surface surrounding the opening in a contamination-preventing sealing engagement therewith.

3,596,793
STEEL CONTAINER
Reiner Kocher, Aitgjulicher Strasse 22, 5162 Birkersdorf, and Artur Kiesow, Gneisenaustrasse 145, 516 Duren, both of, Germany
Filed Nov. 28, 1969, Ser. No. 880,776
Claims priority, application Germany, Dec. 17, 1968, P 18 15 023.7
Int. Cl. B65d *25/14;* B23k *1/14*
U.S. Cl. 220—63 R 2 Claims



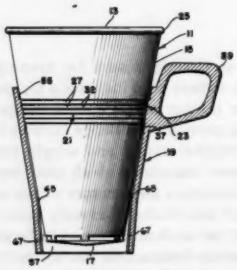
A steel container having a lining of a metal that cannot be welded to steel and is in the form of butt-welded sheets or strips, while a composite strip is interposed between each of the butt welds and the container wall, and comprises a strip of steel plate with a plated-on face of a material of the same kind as that of the lining, the steel plate being welded along its entire length to the inner container wall surface.

3,596,794
SUPPORTING APPARATUS
Donald L. Peters, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Nov. 18, 1969, Ser. No. 877,642
Int. Cl. B23k *27/00*
U.S. Cl. 220—71 5 Claims



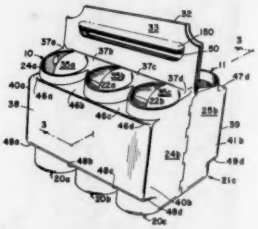
An apparatus for insertion within an internal column of a vessel for supporting said column and vessel.

3,596,795
NESTABLE CUPS AND HOLDERS
Giacinto C. D'Ercoli, Park Forest, Ill., assignor to Solo Cup Company, Chicago, Ill.
Filed Dec. 26, 1968, Ser. No. 786,975
Int. Cl. B65d *21/02;* A47g *19/23, 19/03*
U.S. Cl. 220—97 8 Claims



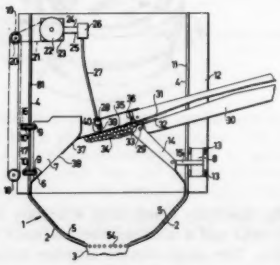
Thin-walled, expendable cups are formed to nest within one another and to have a snap fit interlock with a reusable cup holder. The cup holders may also be formed to nest within one another to provide a reduced overall height for a plurality of stacked cup holders.

3,596,796
CONTAINER FOR CARRYING BOTTLES OR THE LIKE
William F. Stembridge, P. O. Box 756, East Point, Ga.
Filed Feb. 28, 1969, Ser. No. 803,190
Int. Cl. B65d *75/00*
U.S. Cl. 220—102 5 Claims



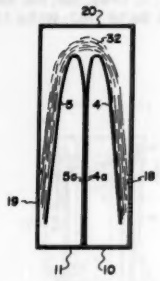
A container for carrying bottles or the like made from a single thin flat plastic sheet that is deformed outwardly to provide pockets and folded together along a common inverted V-shaped central portion so that the pockets are on opposite sides of panels which form the carrying handles. The opposed side edges of the pockets have tabs and slits to provide locking members and the upper ends of the receiving pockets fold downwardly to form partition flaps which separate the bottles. The tubular wall portions of the pockets are reinforced by planar panel surfaces on which advertising is displayed.

3,596,797
DEVICE FOR CIGARETTE CONTAINERS
Nils Wallenborn, Spanga, Sweden, assignor to Arenco Aktiebolag, Stockholm-Vallingby, Sweden
Filed Nov. 12, 1969, Ser. No. 875,684
Claims priority, application Sweden, Nov. 27, 1968, 16188/68
Int. Cl. G07f *11/00*
U.S. Cl. 221—10 10 Claims



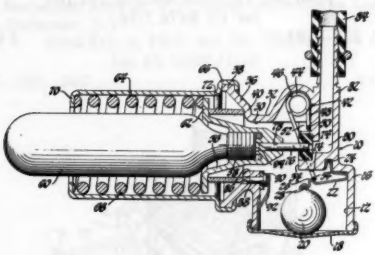
A variable capacity cigarette container or feed hopper provided with motor-driven, flexible sidewalls for varying the volume of the container. A thin, flexible strip is attached to a feed-in conveyor positioned at the top of the container and is adapted to constantly lie on top of the uppermost layer of cigarettes in the container. As the level of the top layer of cigarettes changes in response to the feed-in/feed-out ratio, the strip bends slightly and such movement is detected by an electrical proximity sensor whose output actuates the drive motor to vary the container volume accordingly. This arrangement ensures that incoming cigarettes have no drop to the top layer, which could result in unwanted misalignments.

3,596,798
DISPENSING CARTON FOR SHEET-FORM ARTICLES
Buford B. Smith, P. O. Box 567, Paxton, Ill.
Filed July 7, 1969, Ser. No. 839,239
Int. Cl. B65k 1/08
U.S. Cl. 221—56 5 Claims



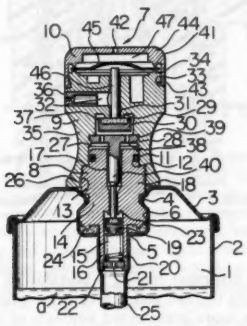
A disposable carton for sheet-form articles, such as disposable plastic film gloves, plastic film bags, etc., comprises an elongated flat carton having a continuous outer wall and inner flaps. The carton is folded so that the inner flaps holds the edges of the sheet-form articles apart to facilitate removal therefrom. End flaps hold the carton in folded form and a removable portion in the folded outer wall provides an opening for removal of the contents one by one.

3,596,799
SENSOR AND FRAGMENTIZABLE GLASS MEANS FOR RELEASING A PENETRATOR
Clarence E. Fairchild, Rochester, and Ernst L. Ranft, Webster, both of, N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 5, 1969, Ser. No. 882,669
Int. Cl. B67b 7/24
U.S. Cl. 222—5 4 Claims



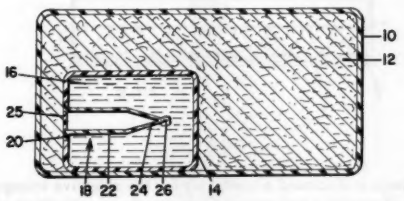
A sensor and trigger mechanism includes a sealed pressure vessel biased axially toward a hollow penetrator pin and normally located in spaced relationship to the penetrator pin by a hollow frangible glass cylinder having a compressively stressed continuous outer surface skin or layer. A fragmentor pin is movable normal to the end of the glass cylinder to engage the outer layer and fragmentize the glass cylinder. This permits the seal of the vessel and the penetrator pin to engage and rupture the seal so that the supply of pressure fluid within the cylinder can escape through the penetrator pin and into a manifold to inflate a restraint cushion. A ball of predetermined weight is seated at the apex of an upwardly opening conical seat. A leaf spring member includes an arm engaging the ball to hold the ball in the seat. The arm includes an integral detent portion which engages a torsionally biased arm of a torsion spring to hold the latter arm out of engagement with the fragmentor pin. The detent portion of the former engages the latter arm only when the ball is seated. Upon application of a predetermined rate of acceleration change to the ball over a predetermined time duration, the ball slides up and out of the apex of the seat and from underneath the former arm to release the latter arm to engage the fragmentor pin and drive the pin into engagement with the outer layer on the end of the cylinder to fragmentize the cylinder.

3,596,800
DEVICE FOR AUTOMATICALLY AND PERIODICALLY SPRAYING PRESSURIZED FLUID
Taisho Iketani, 4-41-6, Nogata, Nakano-ku, Tokyo, Japan
Filed Feb. 6, 1969, Ser. No. 797,006
Claims priority, application Japan, Feb. 13, 1968, 9,084/68
Int. Cl. B67d 5/08
U.S. Cl. 222—54 5 Claims



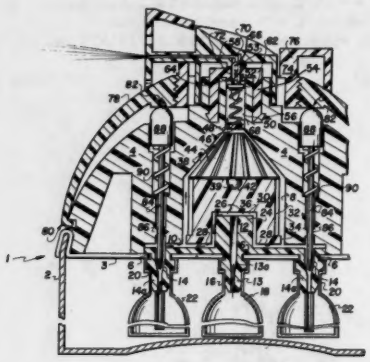
A spraying device comprising a movable, heat-responsive element whose dimension changes with change in temperature and is movable to actuate a valve for sealing a passage through which a pressurized fluid is sprayed from a container into the atmosphere. The element is cooled by gasification of the fluid and warmed by the atmosphere. Thereby, the device automatically and periodically sprays the fluid.

3,596,801
DISPOSABLE INSTANT MIX ALL CONTAINER
Henry C. Barnack, 126 Craiwell Ave., West Springfield, Mass.
Filed July 22, 1969, Ser. No. 843,606
Int. Cl. B67b 7/24
U.S. Cl. 222—81 1 Claim



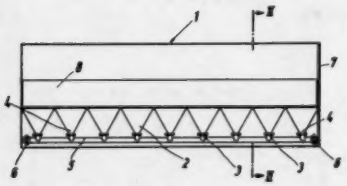
A container comprising a sealed outer envelope containing a powered substance, a sealed inner envelope disposed within the first sealed envelope and containing a liquid, a combination piercing means and nozzle integral with the second envelope for: (1) piercing the second envelope to permit the liquid to escape therefrom and to mix with the powder; (2) piercing the second envelope, and (3) serving as a nozzle for dispensing the resultant mixture from the container.

3,596,802
PRESSURIZED SPRAY CONTAINER FOR SELECTIVE DISPENSING OF PRODUCT
Paul Feldman, 21 St. James Place, Brooklyn, N.Y.
Filed Dec. 18, 1969, Ser. No. 886,288
Int. Cl. B67d 5/52
U.S. Cl. 222—135 6 Claims



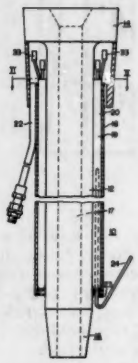
An aerosol dispenser having a plurality of separately contained products therein and a means for preselecting a mixture of one or more preselected amounts of the products for dispensing therefrom.

3,596,803
CONTAINER FOR THE SELECTIVE TRANSPORTATION OF POWDERY MATERIAL OR MIXED CARGO
Wilhelm Hermanns, 462 Frankfurter Str., Portz-Urbach, Germany
Filed Jan. 7, 1969, Ser. No. 789,447
Claims priority, application Germany, Jan. 18, 1968, P 15 56 571.6
Int. Cl. B67c 11/02; B67d 5/60
U.S. Cl. 222—145 2 Claims



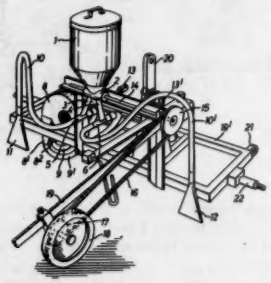
There is disclosed a container for the selective transportation of powdery and granulate material respectively or mixed cargo, which container is provided with discharge funnels and therebelow discharge conduits located above the container bottom wall and having connecting couplings, wherein respectively two adjacent funnel rows are spaced relative to one another and covering plates corresponding in their width to the width of the funnels are pivoted to the edges of the funnel rows closest to one another, said covering plates forming flowoff surfaces for the powdery material when placed together with their free ends and covering the funnels when placed thereupon.

3,596,804
POURING SPOUT FOR CONTINUOUS CASTING OF MOLTEN METALS
Henry Barrow, Lancaster; Jack E. Schmidt, Bowmansville, and Robert E. Fromson, Williamsville, all of, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 7, 1969, Ser. No. 805,132
Int. Cl. B67d 5/62; B65d 5/72
U.S. Cl. 222—146 6 Claims



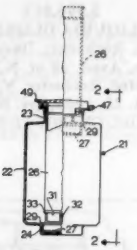
A pouring spout for use in the continuous casting of molten metal is described. It comprises as major components a nozzle body, heating means and antivortexing means.

3,596,805
APPLICATORS OF GRANULAR AND POWDER MATERIAL
Horstine Farmery, North Newbald, York, Yorkshire, England
Filed Jan. 14, 1969, Ser. No. 791,103
Int. Cl. B67d 5/54
U.S. Cl. 222—193 4 Claims



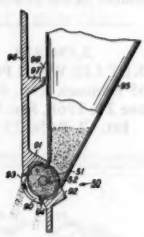
An applicator movable over the ground for applying powder and granular materials such as insecticides, herbicides, fertilizers and such like onto such ground and onto crops growing on such ground including at least one gravity hopper for holding said materials and feeding the same into a rotary metering device discharging into at least one but not more than two depending feed ducts each opening into an airflow duct where a venturi effect is created, a power-driven blower delivering air to said airflow duct which is connected by a flexible hose to a discharge nozzle, and means for driving said metering device at a speed related to movement of the applicator over the ground.

3,596,806
DISPENSING CONTAINER FOR PROPORTIONALLY DILUTING CONTENTS
Jonas C. Harschel, 8 Mariposa Court, Burlingame, Calif.
Filed July 28, 1969, Ser. No. 845,166
Int. Cl. B67d 5/56
U.S. Cl. 222—190 8 Claims



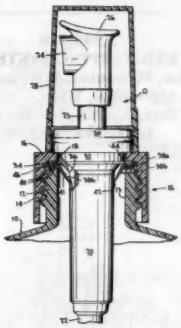
A container has a tube slidable through its neck when the cover is lifted. The bottom of the tube has a cup of a selected capacity which is filled with the liquid in the container when the tube is pushed to the bottom of the container. Above the top edge of the cup the tube is apertured so that as it is raised above the liquid level surplus liquid is drained from the cup. The neck of the container and tube interfit to seal off the tube from the container when the tube is in raised position and also to seal off the apertures in the tube. A diluent (e.g. water) may be poured in to fill the tube. Thus a fixed quantity of liquid and fixed quantity of diluent are measured and may be mixed and dispensed. A cap closes off the tube and container neck when the device is not in use.

3,596,807
DISPENSING APPARATUS
Frederick W. Hudson, West Henrietta, and William C. Emerson, Rochester, both of, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Feb. 6, 1969, Ser. No. 796,964
Int. Cl. G01f 11/20
U.S. Cl. 222—202 4 Claims



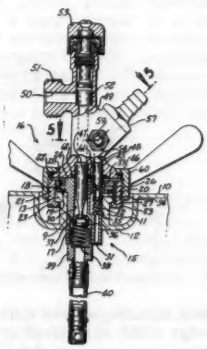
A disposal-dispensing unit for dispensing particulate material in which a substantially enclosed container having an opening in the bottom thereof is sealed by a resilient open-celled elastomeric roll which is rotatably supported in biasing contact with the walls of said opening to retain particulate material therein. Further means are provided exterior the container for rotating the roll sequentially through the toner material in the container wherein the open-celled cavities on the roll surface are uniformly loaded with particulate material, and then past at least one biasing wall where the roll surface is deformed sufficiently to force the particulate material from the roll surface into the dispensing opening.

3,596,808
CONTAINER WITH VENTING GASKET
Douglas F. Corsette, Los Angeles, Calif., assignor to Diamond International Corporation, New York, N.Y.
Filed Jan. 8, 1970, Ser. No. 1,351
Int. Cl. G01f 11/00
U.S. Cl. 222—321 12 Claims



A dispensing container in which a reciprocating dispensing pump extends into the container through its filling and dispensing opening. A combined gasket and diaphragm valve encircles and cooperates with the pump cylinder and has a flexible substantially elastic inner peripheral valving portion snugly encircling and sealing radially against the cylinder and an outer peripheral gasket portion which is compressed between the neck of the container and the supporting flange of the pump barrel. Air is admitted from the atmosphere between the pump-supporting flange and the gasket portion to a location above the valving portion while the lower surface of that portion is exposed to the internal pressure within the container. The valving portion is of downward converging frustoconical shape to admit air into the container while preventing the outflow of fluid from the container. The valving portion may seat against the pump cylinder either at a location beneath the air vent of the latter, thus to admit an inflow only of air through the vent and to prevent outflow therethrough or, if desired, the valving portion may seat around the pump cylinder at a location above the vent to avoid interference with the usual functions of the latter.

3,596,809
KEG-TAPPING DEVICE
Roy A. Taubenheim, Milwaukee, Wis., assignor to The Perlick Company, Inc., Milwaukee, Wis.
Filed June 18, 1969, Ser. No. 834,370
Int. Cl. B65d 83/14; B67d 5/54
U.S. Cl. 222—400.7 2 Claims



A beer-tapping system in which the connection of separable keg and tapping units automatically opens normally

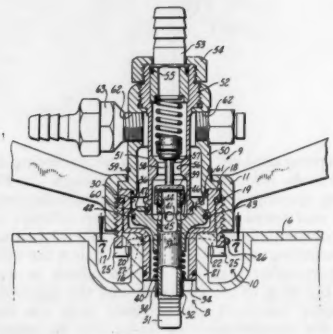
closed beer and gas valves in the keg unit, the keg unit being installed from the exterior in the tapping hole of the keg and remaining a part of the keg; and the valves being displaced from their seated positions by hollow probes that depend from the bottom of the tapping unit. The gas valve is assembled with the body of the keg unit through a hole in the side of the body which is covered by the contiguous surface of the tapping hole.

3,596,810

KEG-TAPPING SYSTEM

Roy A. Taubenheim, Milwaukee, Wis., assignor to The Perlick Company, Inc., Milwaukee, Wis.

Filed Sept. 2, 1969, Ser. No. 862,603
Int. Cl. B65d *83/00*
U.S. Cl. 222—400.7 **5 Claims**



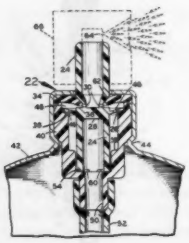
A beer keg-tapping device which consists of a keg unit that is permanently attached to the keg and a coupler unit detachably connected to the keg unit. Both units have liquid and gas passages which communicate when the units are coupled; a single valve element automatically closes both passages of the keg unit when units are not coupled. During coupling the passages of the two units are connected before the valve element is unseated, so that coupling is accomplished without spraying of beer.

3,596,811

VALVE FOR PRESSURIZED CONTAINERS

Erich W. Gronemeyer, 3430 Galt Ocean Drive, and Louis F. Kutik, 8720 S. W. 23rd Place, both of Fort Lauderdale, Fla.

Filed June 9, 1969, Ser. No. 831,417
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.24 **9 Claims**



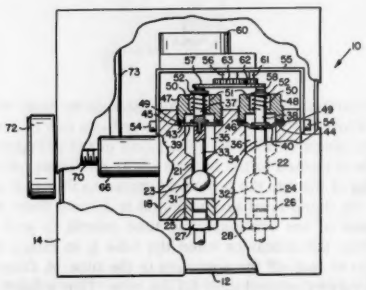
A valve device including a valve stem having a flange with a peripheral edge which is received by an annular receiver which constitutes a separate part of the valve device. The annular receiver has a seat receiving a peripheral edge of the flange, and either the flange or the seat has at least one, and preferably a plurality of openings therein allowing pressurized contents of the container to reach a space between the flange and a sealing ring against which a sealing portion of the valve stem is biased. The interior of the valve stem is blocked, but a hollow portion of the valve stem has at least one opening therein within the sealing ring and normally blocked by the sealing ring. When the valve stem is depressed, the sealing ring bends to uncover the opening, thus allowing container contents to be discharged. The flange is distorted and due to the resiliency or elasticity thereof, it returns the valve stem to its valve-closed position.

3,596,812

AUTOMATIC LIQUID CHLORINE DISPENSER

Costantinos Pandajis, Rochester; David G. Flint, Rochester, and Helge K. Heen, Avon, all of, N.Y., assignors to Adaks Products Incorporated, Rochester, N.Y.

Filed Sept. 23, 1969, Ser. No. 860,213
Int. Cl. G01f *11/32*
U.S. Cl. 222—438 **5 Claims**



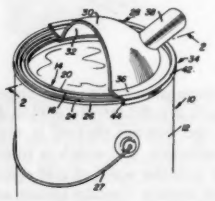
A valve block contains two parallel bores which communicate with a large, vented measuring chamber formed in the block above the bores. At one end the bores are connected, respectively, to a supply of liquid chlorine, and to a swimming pool. A normally closed, spring loaded valve is mounted in each bore intermediate its ends, and has a stem projecting exteriorly of the block for operation by a rotating cam having thereon a detent which momentarily and alternately opens each valve once per revolution of the cam. When one valve is opened, liquid chlorine enters the block to fill the measuring chamber, and when the other valve opens, the contents of the chamber empties into the pool. A cylindrical plunger, which is reciprocably mounted in said block and projects into said measuring chamber, is adjustable to vary the effective volume of the chamber.

3,596,813

PAINT BUCKET LID WITH POURING SPOUT

Elvin R. Munn, 6705 Hancock Ave., St. Louis, Mo.

Filed June 21, 1968, Ser. No. 738,892
Int. Cl. B65d *25/42*
U.S. Cl. 22—569 **2 Claims**



A ready to use paint pourer is offered as a practical aid when the user desires to pour paint from one container into another container in a spillproof manner. Each of the two forms herein shown comprises a self-contained moldable

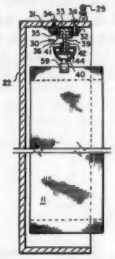
plastic attachment characterized by an auxiliary lid which is brought into use after the regular closing lid has been pried loose and removed from the keying channel of the annular mounting rim. This auxiliary or replacement lid has (1) a suitable spout and (2) marginal attaching and retaining means having a web whose outer peripheral edge is provided with an inverted channel-shaped adapter capable of being conformingly snapped over the rim's securing bead.

3,596,814

METHOD FOR PREPARING DRAPERY SAMPLES AND CASE FOR SAME

Dawnelle L. Kelley, and James M. Kelley, both of 777 Kelley Drive, Broomfield, Colo.

Filed Sept. 1, 1967, Ser. No. 664,989
Int. Cl. A41h *43/00*; D06j *1/00*
U.S. Cl. 223—28 **3 Claims**



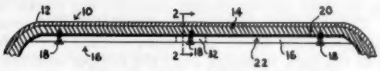
Drapery samples of large pieces of fabric have a strip of stiffening material attached to opposite ends, and the pieces are fan folded to reduce the space required for storage. A drapery sample case provided with a rod in the upper side permits the fan-folded drapery samples to hang in the case by means of clamp hanger.

3,596,815

GARMENT-HANGING RACK FOR MOTOR VEHICLES

Mamie M. Willett, 808 E. Queen, Albany, Oreg.

Filed Apr. 14, 1969, Ser. No. 815,604
Int. Cl. B60r *11/00*
U.S. Cl. 224—42.1 CA **8 Claims**



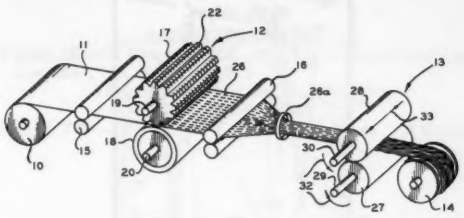
A clothes-hanging rack for motor vehicles is provided which hugs the car ceiling, and is neat, inexpensive, inconspicuous and completely out of the way when not in use. The hanger includes a tough hollow frame or housing and a series of distinct hanger-supporting fingers, normally contained, and individually retained, within the housing. Each finger is bendable under the weight of a garment hanger, and the garment carried thereby, and each has its own assigned position so that the hangers do not slide from side to side as the car rounds curves. The frame stands as an upholstery guard between the finger-supported hangers and the ceiling upholstery, as well as a housing and support for the fingers.

3,596,816

FIBRILLATION METHOD

Claude V. Brown, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 5, 1969, Ser. No. 821,856
Int. Cl. B26f *3/02*
U.S. Cl. 225—2 **8 Claims**



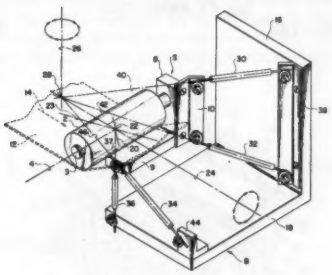
A method for fibrillating an oriented film or thermoplastic material. The method includes forming elongate lines of weakness in the film and mechanically working the weakened film to promote the splitting up along the lines of weakness.

3,596,817

WEB-HANDLING DEVICE

John E. Morse, and Richard A. Marsh, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,566
Int. Cl. B65h *25/26*
U.S. Cl. 226—21 **6 Claims**



A roller across which a flexible web moves is mounted for rotation about a longitudinal axis and is constrained for two degrees of movement, namely, pivotal movement about an upstream axis which is perpendicular to a web approach plane and also pivotal movement about an axis which is perpendicular to and intersects both the longitudinal axis and the upstream axis. This constraint can be accomplished by flexures or pivoted lengths which are connected between a roller support and a base in a manner to provide the desired degrees of movement and no others.

3,596,818

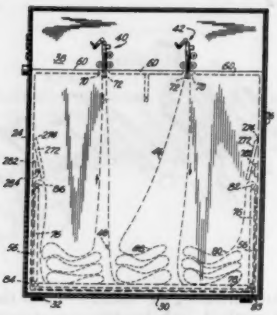
TAPE-FEEDING AND STORAGE APPARATUS WITH TENSION-SENSING MEANS

Roger Charles Curtis, New Haven, Conn.; William Henry Loescher, Harrison, N.Y., and William Edward Springer, Shelton, Conn., assignors to Dictaphone Corporation, Bridgeport, Conn.

Filed Oct. 25, 1968, Ser. No. 770,696
Int. Cl. B65h *25/22*
U.S. Cl. 226—25 **5 Claims**

A recording and transcribing system including a single-bin, random-wind tape storage magazine to store an endless loop of magnetic tape in random folds. The tape is drawn from the magazine past a recording unit and then is fed back to the magazine where it may be stored in random folds until drawn

up past a transcribing unit and then back into the magazine again. Both the recording and transcribing units are provided with bidirectional tape drive capability and the tape storage

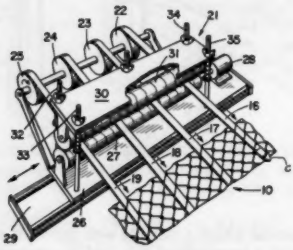


magazine includes tape tauntness-sensing mechanisms to disconnect either or both of the tape drive units if the tape is drawn taut during operation.

3,596,819
STRIP-INSERTING METHOD AND APPARATUS FOR CHAIN LINK FENCES

John J. Lambert, 7265 W. 83rd St., Los Angeles, Calif.

Division of Ser. No. 638,242, May 15, 1967, Patent No. 3,513,532. Filed Sept. 10, 1969, Ser. No. 871,182
Int. Cl. B65h *17/20*
U.S. Cl. 226—109 **4 Claims**



This disclosure relates to a method and apparatus for inserting elongated strips of aluminum which may be of various colors into channels defined by the chain mesh structure of chain link fences to thereby greatly enhance the beauty of the fences and also provide a windbreak and block visibility if desired.

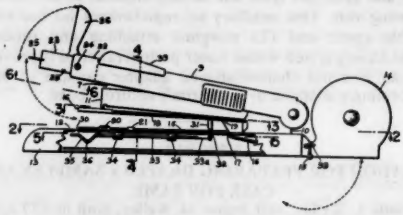
The method involves continuously urging one or more elongated strips into the formed channels in the fence in a very rapid manner. The apparatus for carrying out the method contemplates a pair of rollers powered by an electric motor, one or more strips being simultaneously fed between the rollers directly into the channels of the chain link fence.

3,596,820
STAPLER

Kwong Li Lou, c/o Air Asia Company, Quality Control Division, Tainan, Taiwan, China

Filed Mar. 17, 1969, Ser. No. 807,785
Int. Cl. B25c *5/02*
U.S. Cl. 227—76 **9 Claims**

A stapler modified to feed reinforcing tape to one or both sides of the material being stapled, prior to stapling. The sta-

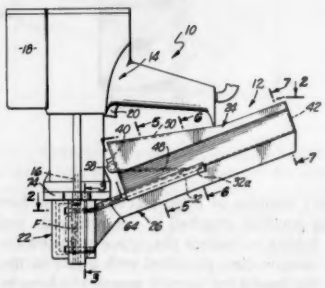


pled reinforcing tape is cut after stapling by a cutter pivotally attached to the stapler.

3,596,821
HOPPER-TYPE FASTENER INFEED DEVICE FOR FASTENER-DRIVING TOOLS

Irney Lee Rogers, 1418 E. Phillips, and Donald B. Halstead, 278 Foxbury Ave., both of Pomona, Calif.

Filed May 13, 1969, Ser. No. 824,049
Int. Cl. B25c *1/00*
U.S. Cl. 227—138 **16 Claims**



An infeed device for feeding fasteners, such as nails, to a fastener-driving tool. The infeed device has a guide for attachment to the front end of the tool body, a hopper for containing a bulk quantity of loose unattached fasteners to be driven, and an infeed chute through which the fasteners move under the action of gravity from the hopper into a bore within the infeed guide. This guide is coaxially aligned with the tool-driving spindle to receive the latter during each driving stroke and is equipped with means for locating each fastener in a fixed driving position wherein the fastener is disposed to be engaged and driven forwardly into a workpiece by the tool spindle during each driving stroke of the spindle. The hopper is uniquely constructed and arranged and equipped with novel pneumatic means for inducing passage of the bulk fasteners from the hopper into the feed chute without jamming.

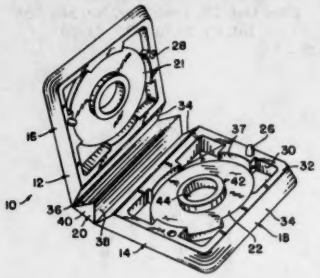
3,596,822
PACKAGE STRUCTURE

Danforth Holley, Grosse Pointe Shores, Mich., assignor to Holley Plastics Company, Warren, Mich.

Filed May 21, 1969, Ser. No. 826,611
Int. Cl. B65d *1/36*
U.S. Cl. 229—15 **5 Claims**

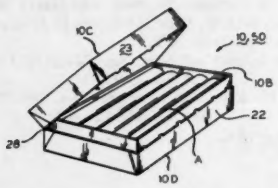
A folding package construction including a pair of body portions each having a recess therein, and a hinge portion having a triangular cross section connected to adjacent edges of the body portions. The body portions have inner and outer sides and inclined edges which provide package rigidity and permit interlocked stacking of a plurality of packages. Also, the inclined edges at the triangular hinge portion allow the body portions to pivot or fold toward each other to close the

package construction. A nipple and a recess are provided on the inner sides of each body portion cooperating with the



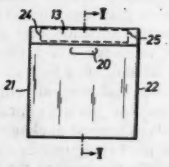
nipple and recess in the other body portion to provide a snap lock on closure of the package. The snap lock prevents the body portions from opening.

3,596,823
END-LOADED, TOP-OPENING CARTON
Karl Zitzelman, Newfoundland, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed May 2, 1969, Ser. No. 821,295
Int. Cl. B65d *5/22*
U.S. Cl. 229—33 **13 Claims**



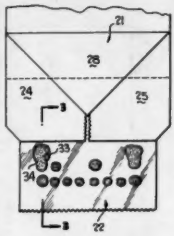
An end-loaded, top-opening carton formed from a cut and scored blank and adapted when open to display articles therein, and comprising an outer carton including tray and cover portions formed from a main panel, opposed pairs of side and end panels, the latter being hingedly connected along adjacent edges of one of the side panels. The carton is characterized by an insert collar employed in the loading thereof and arranged to surround articles during loading into the carton, the collar being adhered to the interior faces of the tray portion.

3,596,824
CARRIER BAGS
Michael Lehmacher, Unterdorf Str., and Hans Lehmacher, Beckergasse, both of Mondorf Troisdorf, Germany
Division of Ser. No. 739,559, June 24, 1968
Filed Dec. 3, 1969, Ser. No. 882,392
Claim priority, applications Germany, July 1, 1967, and July 28, 1967, L56890 and L57096
Int. Cl. B65d *33/02, 33/08*
U.S. Cl. 229—54 **11 Claims**



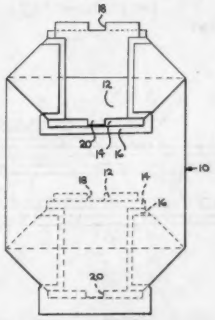
A synthetic thermoplastic carrier bag which consists of a doubled over thermoplastic sheet forming both faces and bottom of the bag. The edges of the sheet are longitudinally welded together to form the bag container, and there exists a reinforced upper portion around the open periphery of the bag, which portion is at least two layers thick. The leading edges of the upper peripheral portion is formed by a doubled over layer of material, and a grip aperture is formed in each face.

3,596,825
MULTI-PLY BAGS
Vernon Martin, Charlotte, N.C., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Sept. 9, 1969, Ser. No. 856,448
Int. Cl. B65d *33/02*
U.S. Cl. 229—55 **5 Claims**



This disclosure relates to improvements in multi-ply bags which generally include at least an outer wrapper and an inner liner, and is particularly directed to a bottom construction formed by adhesively securing together a plurality of closure panels or flaps. The securement is effected by forming heat-shrunk openings in the inner liner to expose the interior of the outer wrapper which is brought into overlying adhesive contact with the exterior of another closure flap or panel such that the bond is between the material of the outer wrapper.

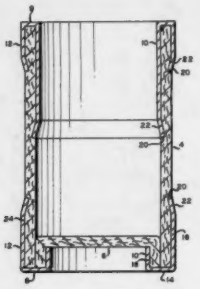
3,596,826
STEPPED END BAG
William J. Reiselt, Valdosta, Ga., assignor to Owens-Illinois, Inc.
Filed Sept. 25, 1969, Ser. No. 861,004
Int. Cl. B65d *33/18*
U.S. Cl. 229—55 **1 Claim**



A unique stepped end bag of the type having a tubular body formed from a plurality of superposed plies of bag-forming material terminating at different points to form stepped ends featuring a component arrangement which provides alternate grasping notches and tabs which facilitates the use of bottoming equipment to close and seal the ends of the bag that was previously limited to use on flush-cut bags. The alternate notches and tabs are formed in the inner ply to

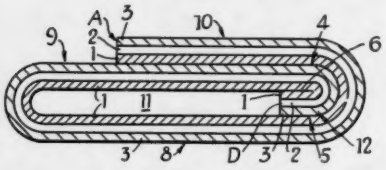
allow the grasping fingers on bottoming equipment to grasp and separate the opposite sides of the bag ends so that the ends can be automatically glued and folded into sealed relationship.

3,596,827
COMPOSITE CONTAINER AND BLANK
Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company
Filed Sept. 10, 1969, Ser. No. 856,631
Int. Cl. B65d 3/10
U.S. Cl. 229—5.6 5 Claims



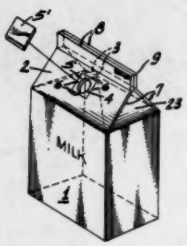
An improved composite container and paperboard blank for forming a paperboard and metal composite container, said blank formed with score lines having sides converging at an angle of at least 90° for receiving an end of the metal portions of said container.

3,596,828
FLEXIBLE POUCHES AND BAGS
Norman Foster, Hampshire; Kenneth George Tee, Hampshire; David Edward Conway, Hampshire, and Ernest Stonehouse, Somerset, all of, England, assignors to British-American Tobacco Company, Limited, London, England
Filed Sept. 11, 1969, Ser. No. 857,096
Claims priority, application Great Britain, Oct. 16, 1968, 49027/68
Int. Cl. B65d 33/22
U.S. Cl. 229—62 6 Claims



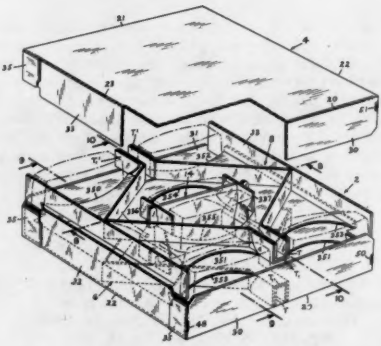
A flexible pouch, such as a tobacco pouch, comprises two layers of heat-sealable thermoplastic plastics materials adherent to opposite surfaces of a layer of metal foil. The materials of the said two layers have limited compatibility with each other and the pouch is sealed, where it will require to be opened, at a line of contact between surfaces of different layers of the plastics materials. Thus a peelable seal can be so formed between the backwall of the pouch and an inwardly folded portion at the marginal edge of the front wall thereof and/or between the front wall of the pouch and a flap folded over the said front wall.

3,596,829
CONTAINER STRUCTURES
Conrad O. Gardner, 99 Woodhaven, Edmonds, Wash.
Filed Oct. 26, 1966, Ser. No. 589,636
Int. Cl. B65d 5/70, 41/20
U.S. Cl. 229—7 S 2 Claims



A straw puncturable dispensing opening which includes a thin sheet of material which is sealed to the outside surface of a surmounting closure of a liquid container around the dispensing opening thereby making possible an easy visible inspection of the condition of the seal.

3,596,830
TWIN TV TUBE BOX
William W. McFarland, Wooster, and Harry D. Wintringer, III, Shelby, both of, Ohio, assignors to International Paper Company, New York, N.Y.
Continuation-in-part of Ser. No. 744,267, June 17, 1968, Pat. No. 3,494,534.
Filed Nov. 26, 1969, Ser. No. 880,285
Int. Cl. B65d 25/14
U.S. Cl. 229—14 C 13 Claims



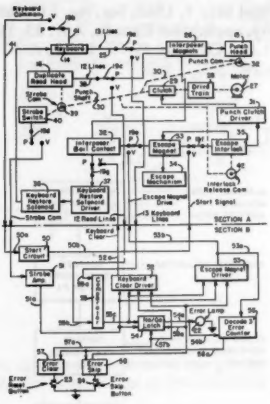
A paperboard container for shipping and storing fragile articles, more particularly television tubes, which includes an outer container, a first packaging insert spacer extending upwardly from the bottom of said outer container and shaped substantially so as to successively touch consecutive wall panels of the outer container, a first packaging insert having a plurality of apertures and hingedly connected opposed end flaps deposited into the outer container with the flaps disposed downwardly, a second packaging insert substantially identical to the first packaging insert, a second packaging insert spacer substantially identical to the first packaging insert spacer positioned inversely to the first packaging insert spacer and a top substantially identical to the bottom, thereby forming a container having a top and bottom which are substantially mirror images of one another.

3,596,831

PUNCHED CARD VERIFIER ADAPTER

William P. Parmer, Fort Lauderdale, Fla., assignor to Data Research Corporation and Computer Utilities Corporation, Fort Lauderdale, Fla., part interest to each

Filed July 22, 1969, Ser. No. 843,657
Int. Cl. G06k 1/16
U.S. Cl. 234—34 9 Claims



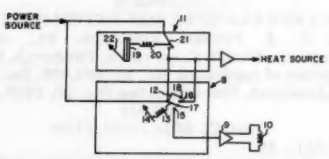
A control unit is added to a standard card punch for permitting the punch to operate in either of two modes, i.e., its conventional punch mode, or a verify mode wherein information previously punched on a card is compared with information which the operator keys into the card punch keyboard. If the keyboard and card-punched data do not agree, an error light is energized, the machine is caused to stop, and the keyboard locks up. The read head normally provided in the card punch for duplicating operations is used during the verify mode to read previously punched information from a card for comparison with information keyed into the keyboard.

3,596,832

HUMIDIFICATION APPARATUS

Albert Whetstone, Southport, Conn., and Samuel Fine, New City, N.Y., assignors to Science Accessories Corporation, Southport, Conn.

Filed June 23, 1969, Ser. No. 835,568
Int. Cl. G05d 22/00
U.S. Cl. 236—44 C 2 Claims



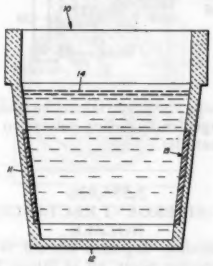
A humidifier for use in a recirculating hot water and/or steam heating system. A bypass valve is provided for the controlled delivery of the system fluid to an absorbent material placed over the radiator or fin member of the heating system.

3,596,833

FRAGRANCE-RELEASING FLOWERPOT

Francis E. Gould, Princeton, N.J., assignor to National Patent Development Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 599,911, Dec. 7, 1966, Pat. No. 3,400,890.
Filed Sept. 5, 1968, Ser. No. 757,737
Int. Cl. A61l 9/04
U.S. Cl. 239—54 6 Claims



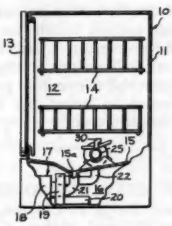
A decorative article fabricated to resemble a flowerpot and incorporating therein a synthetic hydrophilic hydrogel capable of releasing fragrance in the presence of a solvent.

3,596,834

SELF-REVERSING SPRAY ARM ASSEMBLY FOR A WASHING APPLIANCE

Donald S. Cushing, Louisville, Ky., assignor to General Electric Company

Filed July 28, 1969, Ser. No. 845,144
Int. Cl. B05b 3/06
U.S. Cl. 239—255 5 Claims



A spray arm in an automatic dishwashing machine is caused to rotate on its axis from the resultant reactive force of a washing liquid conducted through the body of the spray arm and then outwardly as a jetstream. The jetstream is discharged from a nozzle mounted to swivel between two drive positions on the body of the spray arm. The nozzle is intermittently released so that it will react to the force of the washing liquid discharged therefrom and swivel from one of its drive positions to the other and thereby reverse the direction of rotation of the spray arm.

3,596,835

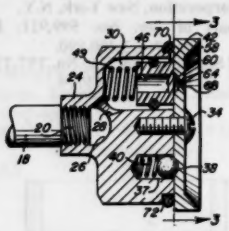
ADJUSTABLE TURRET SPRAY NOZZLE

Raymond D. Smith, and Jane M. Smith, both of 4704 N.W. 61st St., Oklahoma City, Okla.

Filed Dec. 26, 1968, Ser. No. 787,097
Int. Cl. A62c 31/02
U.S. Cl. 239—394 5 Claims

A spray nozzle employed as a part of the crop-spraying system employed on a crop-spraying aircraft incorporating a rotatable plate having a plurality of orifices therein of different size for alignment with a discharge passage with the plate including one portion thereof which is imperforate to

render the nozzle inoperative when desired. The structure for adjustably locking the nozzle plate in position includes a



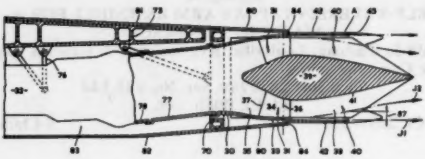
structure for causing the material discharged through the orifice to be discharged in a swirling pattern to provide efficient spraying of the material.

3,596,836

CONVERGENT-DIVERGENT RECTANGULAR SECTION NOZZLE

Ralph Murch Denning; Reginald Harold Wiltshire; Stephen Sales, and Alexander Scott, all of Filton, Bristol, England, assignors to Rolls-Royce Limited, Derby, England

Filed Sept. 11, 1969, Ser. No. 857,028
Claims priority, application Great Britain, Sept. 14, 1968, Jan. 30, 1969, 43,825/68;05,266/69
Int. Cl. B05b *1/32*
U.S. Cl. 239—456 **4 Claims**



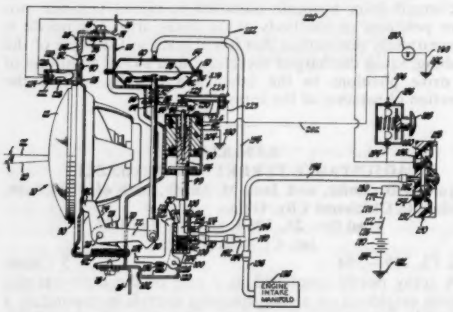
The disclosure of this invention pertains to a convergent-divergent rectangular section nozzle for jet propulsion engines. To convert the nozzle into a convergent-only configuration one of the four walls of the divergent part is movable into a position adjacent the convergent part thereby allowing the ambient slipstream to enter the nozzle immediately downstream of the throat thereof.

3,596,837

AUTOMATIC HEADLAMP-AIMING SYSTEM

Harold E. Todd, and David P. Clayton, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 18, 1969, Ser. No. 859,147
Int. Cl. B60q *1/00*
U.S. Cl. 240—7.1 **6 Claims**



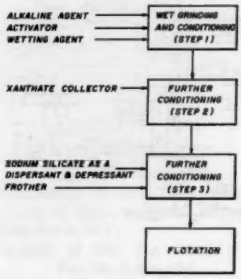
An automatic headlamp-aiming system for a motor vehicle wherein a headlamp is hingedly connected to the vehicle for controlled rotation about a horizontal axis as driven by a vacuum motor which is energized upon operator initiation of an aiming cycle. Control means including a single-ended mercury switch electrically connected to a solenoid serves to automatically deenergize the vacuum motor and lock the system against further movement when the headlamp attains a properly vertically aimed position.

3,596,838

FLOTATION OF SULPHIDE ORES

David Weston, 32 Parkwood Avenue, Toronto, Ontario, Canada

Filed May 7, 1968, Ser. No. 727,268
Claims priority, application Canada, Apr. 23, 1968, 018,182
Int. Cl. B02c *19/00;* **B03d** *1/02*
U.S. Cl. 241—16 **19 Claims**



Flotation of sulphide minerals from their ores is achieved by a process in which two or more conditioning steps are carried out prior to a froth flotation step. The first step comprises conditioning a pulp of the ore in the presence of at least one alkaline agent selected from a group of agents which is defined in the specification which follows. The pulp is then further conditioned in the presence of a member of the xanthate family of flotation reagents and sufficient sodium silicate to effectively disperse the host rock minerals. The resulting pulp is then subjected to froth flotation. Preferably there are three separate conditioning steps, namely conditioning carried out in the presence of (1) one of the hereinafter defined alkaline agents, (2) a member of the xanthate family of flotation reagents, and (3) sodium silicate. The invention is particularly valuable for the recovery of metallic sulphides from ores containing talcy minerals or natural slimes and the invention has been applied with signal success to the flotation of copper-nickel sulphide ores containing over 40 percent by weight of talcose host rock minerals.

3,596,839

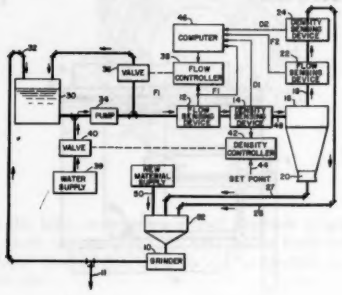
SLURRY PARTICLE SIZE DETERMINATION

Richard E. J. Putman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 601,608, Dec. 14, 1966, now abandoned. This application Dec. 10, 1969, Ser. No. 884,031
Int. Cl. B02c *21/00, 25/00*
U.S. Cl. 241—20 **14 Claims**

Method and apparatus for determining the particle size distribution in a slurry in a grinding circuit with the method and apparatus operative in an online manner and at frequent intervals for effecting this determination. A high-speed computer is used to better control the operation of the circuit. Such particle size distribution, obtained through a determination of the cumulative percentage of solids in the grinder output slurry, is regulated in relation to the infeed of slurry material into the grinder as a predetermined function of the

weight of new material introduced into the grinder unit circuit, the known particle size distribution of that new material



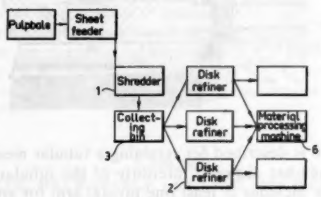
from classifiers returned as infeed to the grinder and the calculated particle size distribution of that overflow material.

3,596,840

PROCESS FOR DISINTEGRATING DRY CELLULOSE PULP

Nils Verner Blomqvist, Ornskoldsvik; Ingemar Liss-Albin Croon, Alfredshem, and Lars Goran Eriksson, Vasterhus, all of, Sweden, assignors to Mo Och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Aug. 14, 1967, Ser. No. 660,451
Claims priority, application Sweden, Aug. 17, 1966, 11152/66
Int. Cl. B02c *7/06, 13/288, 21/00*
U.S. Cl. 241—28 **10 Claims**



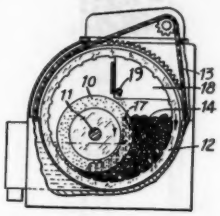
A process is provided for producing disintegrated (fluffed) dry cellulose fibers from baled cut pulp sheets for use in products such as diapers, absorbent pads and rolls, and the like. The sheets are shredded into particles and subsequently fed in a carrier gas stream to a disc mill with a gap width within the range of 0.1 to about 0.5 mm. wherein the shredded particles are milled until disintegrated and the fibers liberated. The fibers are then removed by the gas stream.

3,596,841

GRINDER FOR MECHANICAL PULP MAKING

James H. Perry, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of application Ser. No. 775,624, Nov. 14, 1968, now abandoned. This application June 2, 1970, Ser. No. 42,629
Int. Cl. B02c *4/00, 4/44, 15/00*
U.S. Cl. 241—38 **10 Claims**



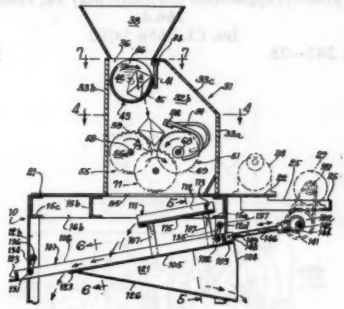
An improved grinder for mechanically making pulp from logs that has improved pulp-clearing passages associated with the grinding wheel and log-holding pocket.

3,596,842

MACHINE FOR SEPARATING A GRANULAR SUBSTANCE FROM A CONTAINER OF PAPER OR THE LIKE

Delbert K. Barber, Dearborn, Mich., assignor to Superior Tea and Coffee Company, Chicago, Ill.

Filed Mar. 5, 1969, Ser. No. 804,510
Int. Cl. B02c *18/06, 18/22*
U.S. Cl. 241—222 **2 Claims**



A machine for receiving closed packages of paper or other tearable material containing a granular substance, tearing the walls of the package to a substantial degree by the use of toothed means, delivering the remnants of the torn package and the contents to a vibrating screen having interstices to pass the substance to a hopper therebelow, the screen being inclined to deliver the remnants to one collecting point and the hopper being inclined to deliver the substance to another collecting point.

3,596,843

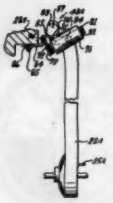
METHOD AND APPARATUS FOR MAKING A STRIP CONDUCTOR COIL

Robert B. Lightner, and Benton A. Whiteman, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 598,347, Dec. 1, 1966, abandoned.
Filed Nov. 1, 1968, Ser. No. 793,628
Int. Cl. H01b *13/00*
U.S. Cl. 242—7.03 **5 Claims**

Method and apparatus for making a strip conductor coil construction wherein means are provided for holding a core

element having an outer surface means and a longitudinal axis and means are provided for holding a strip of conductive material. Means are provided for rotating the core element to draw the strip of conductive material around part of a guide roller means to guide the strip before the strip is wound on the rotating core element. Means are provided for automatically adjusting the position of the guide roller means relative to the core element about an axis substantially perpendicular to the longitudinal axis of rotation of the guide roller means to properly align the conductive strip relative to the core element during the winding of the strip thereon so that the strip will be wound to the outer surface means of the core element in the proper position relative thereto.



3,596,844

METHOD AND APPARATUS FOR CONTINUOUSLY WINDING FILAMENTARY MATERIAL

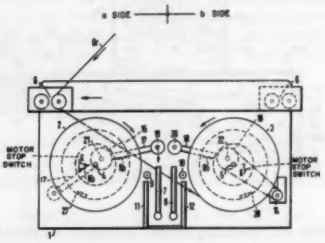
Gunther Engmann, Plockendorf, Germany, assignor to Maschinenfabrik Niehoff Kommandit-Gesellschaft, Schwabach near Nurnberg, Germany

Filed May 5, 1969, Ser. No. 821,799

Claims priority, application Germany, May 14, 1968, P 17 74 266.4

Int. Cl. B65h *54/00*

U.S. Cl. 242—25 **10 Claims**



A method and apparatus for winding successively onto a plurality of spools a filamentary material, such as wire, which is continuously fed without interruption when the winding changes from one spool to another spool. A pair of spools are provided beside and parallel to each other with the winding taking place at any given instant on one of the spools. When this one spool has almost been filled the traverse which distributes the filamentary material along the spool is shifted from this one spool to the region of the empty spool while a deflecting roller is shifted to an operative position for deflecting the filamentary material into a loop around the empty spool. Each of the spools has, at an end, an auxiliary spool where a cutter cuts the filamentary material to terminate the length thereof which is wound onto the filled spool. The shifted deflecting roller is returned to its starting position so as to release the loop for movement onto the empty spool and the windings continue thereon. The operations are then repeated with the new spool after the previously empty spool has become almost filled.

3,596,845

TEXTILE MACHINE

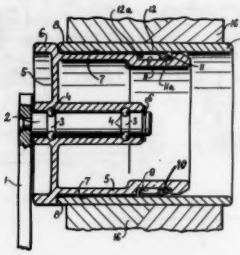
Jaroslav Rajnoha, Tyniste Nad Orlici, and Ladislav Bures, Usti Nad Orlici, both of, Czechoslovakia, assignors to Elitex Zavody Textilniho Strojirenstvi Generalni Reditelstvi, Liberec, Czechoslovakia

Filed Feb. 5, 1969, Ser. No. 796,765

Claims priority, application Czechoslovakia, Feb. 9, 1968, 988-68

Int. Cl. B65h *75/30*

U.S. Cl. 242—46.6 **10 Claims**



A textile machine includes mounting means and a bobbin-tube holder arrangement which is carried by the mounting means. The bobbin-tube holder means includes a hub having an outer cylindrical surface which is provided with at least one circumferential groove, and an annular clamping member located in the groove and having a portion which conically diverges axially of the groove and also radially outwardly thereof so that, when a bobbin tube is telescoped over the hub it deflects the portion which consists of elastically yieldably material and is thus releasably held and centered relative to the hub.

3,596,846

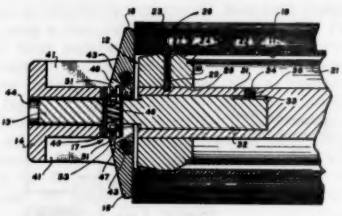
RETAINING DEVICE

Bevan H. Johnston, La Mesa, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.

Filed Mar. 3, 1969, Ser. No. 803,815

Int. Cl. B65h *17/02, 75/02*

U.S. Cl. 242—68.3 **5 Claims**



A device is described for retaining a tubular member on a support member disposed interiorly of the tubular member. The device includes at least one pivotal arm for engaging an end of the tubular member to hold it in place. The arm is pivotal to a retracted position upon movement of a reciprocally movable knob, thereby enabling the tubular member to be removed axially over the retaining device.

3,596,847

AIR MANDREL

Arnold G. Peterson, Sunderland, Mass., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

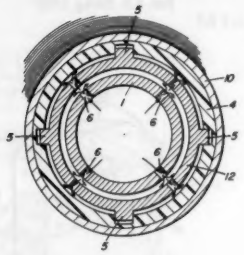
Filed Dec. 17, 1969, Ser. No. 885,905

Int. Cl. B65h *75/24, 75/30*

U.S. Cl. 242—72 **4 Claims**

An expansible mandrel is provided with a splined hollow shaft having perforations and connected to a source of com-

pressed air. Around the shaft is an elastomeric sleeve, notched where it crosses a spline, which when air is introduced between the splines, expands, gripping any tube,



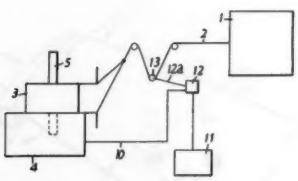
such as the tube on which a roll of paper is wound. As the splined shaft is connected to the caps at both ends of the elastomeric sleeve, the latter is not subjected to torsional strains in use.

3,596,848

WEB FEEDING MECHANISMS

Denis E. E. French, 74 Ennisdale Drive, West Kirby, Wirral, Cheshire, England

Filed Oct. 13, 1969, Ser. No. 865,549
Claims priority, application Great Britain, Oct. 19, 1968, 48511/68
Int. Cl. B65h *75/22, 23/10, 23/24*
U.S. Cl. 242—75.43 **10 Claims**



A web is fed from a reel located on a table about a dancing roller which varies position with tension on the web. The reel is supported on a cushion of air passed through a plurality of ball bearing spring loaded normally closed nozzles on the table. The air pressure is controlled by a butterfly valve operated by the dancing roller to vary the air pressure and, therefore, the air cushion support as a function of the tension on the web.

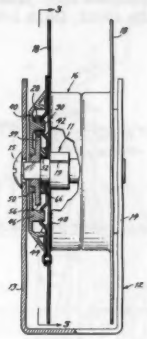
3,596,849

MAGNETIC RELEASABLE LOCKING MECHANISM FOR CORD REELS

Bernard J. Tamarin, Philadelphia, Pa., assignor to "Cordomatic" Division, The Vacuum Cleaner Corporation of America, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 738,518, June 20, 1968, now Patent No. 3,528,624. This application July 23, 1969, Ser. No. 843,924
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.7 **14 Claims**

A spring-wound rotatable cord reel having a fixed magnetized ratchet and a pawl of magnetically attractable material pivotally secured to and rotatable with the reel, the pawl lockingly engaging the ratchet when the reel rotates in a cord-winding direction at a relatively slow rate and orbiting around the ratchet when the reel rotates in a cord-unwinding or payout direction at a faster rate, so that the cord can be rapidly pulled out to the desired length and then gently



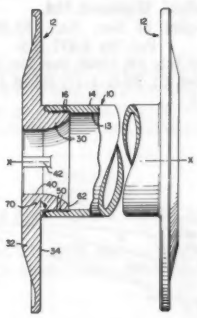
released to latch or lock it in this position and thereafter, if desired, pulled out again and rapidly released until the entire cord is retracted and wound on the reel.

3,596,850

TEXTILE BEAM

John B. McMurtrie, 230 Broadway, Milton, Pa.

Filed Sept. 15, 1969, Ser. No. 857,730
Int. Cl. B65h *75/14*
U.S. Cl. 242—118.62 **10 Claims**



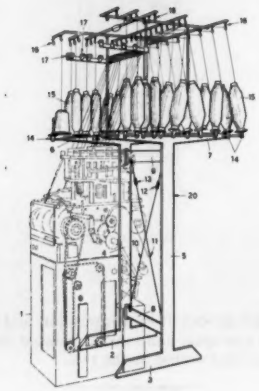
A textile beam includes a substantially cylindrical tube having internal threads at the opposite ends thereof. A pair of heads are each provided with hubs having external threads thereon which are threaded within opposite ends of the tube. The threads on the tube and heads include opposite flanks extending at oblique angles to the longitudinal axis of the tube. Abutting surfaces are formed on the ends of the tube and each of the heads. These abutting surfaces are preloaded in an axial direction parallel with the longitudinal axis of the tube and extend parallel with or are an extension of a line from the joint between the abutting surfaces and the center of deflection of the associated head. Each end of the tube is beveled, and the abutting surface formed on each of the heads joins with an annular surface of arcuate cross-sectional configuration.

3,596,851

BOBBIN-CARRIER FOR CIRCULAR KNITTING MACHINES

Armando Vincoli, Brescia, Italy, assignor to Santoni & S.p.A., Brescia, Italy

Filed June 23, 1969, Ser. No. 835,666
Claims priority, application Italy, June 24, 1968, 9301 B/68
Int. Cl. B65h *49/02;* D02h *1/00;* D03i *5/08*
U.S. Cl. 242—131 4 Claims



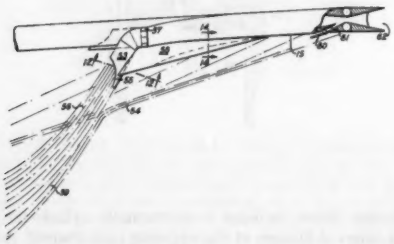
A bobbin carrier for circular knitting machines for hosiery is disclosed, which consists of a stand formed by a base portion and at least two vertical uprights, the assembly being completely independent from the knitting machine proper.

3,596,852

SUPERSONIC AIRCRAFT

George H. Wakefield, Highland, Md.

Continuation-in-part of Ser. No. 552,499, May 24, 1966, Pat. No. 3,497,163.
Filed July 19, 1968, Ser. No. 746,029
Int. Cl. B64c *3/16;* B64d *33/04*
U.S. Cl. 244—13 11 Claims



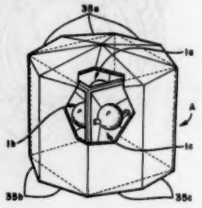
A supersonic aircraft having retractable wings and stabilizer controls wherein the leading edge of the airfoil is a continuous air inlet and the fuselage and all remaining portions of the aircraft are situated largely downstream of the air inlet, the aircraft being substantially T-shaped in configuration, a large portion of the shock wave generated by the aircraft being received into the air inlet. At least a portion of the jet exhaust is deflected into the shock wave produced by the aircraft at supersonic speeds for the purpose of disrupting the shock wave. Rapid deceleration of the aircraft from supersonic to sonic speeds obtained by extension of retractable airfoils and stabilizers.

3,596,853

SPACE HEAT SOURCE

Charles G. Anderson, Carlisle, Ohio, assignor to The United States of America, as represented by the United States Atomic Energy Commission.

Filed Aug. 13, 1969, Ser. No. 851,152
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SS 6 Claims



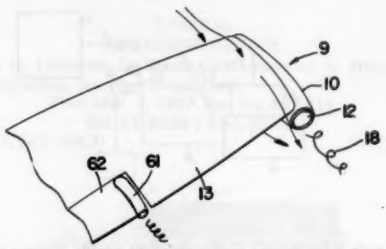
A space capsule including heat source devices individually recoverable in which each heat source device includes a combined pyramidal-type reentry body and heat reflector and a radioisotopic heat source disposed in a hollow or concave portion of the body.

3,596,854

VORTEX GENERATOR FOR AIRFOIL STRUCTURES

William R. Haney, Jr., 135 Chestnut Lane, Cleveland, Ohio

Filed June 9, 1969, Ser. No. 831,560
Int. Cl. B64c *21/06*
U.S. Cl. 244—40 23 Claims



A vortex generator for the ends of airfoil structures that directs air on the high-pressure side of the structure into a vortex generator chamber and discharges the swirling air at the trailing edge of the structure. The exit orifice of the vortex generator may be directed at fixed or variable attitudes for causing the vortex created by the generator to either increase or decrease lift provided by the airfoil structure.

3,596,855

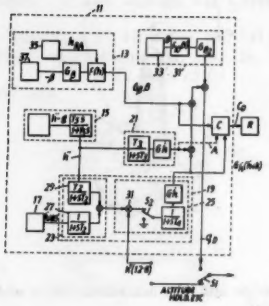
AIRCRAFT CONTROL SYSTEM

Geoffrey M. Barling, London, England, assignor to Elliott Brothers (London) Limited, London, England

Filed Apr. 7, 1969, Ser. No. 813,949
Claims priority, application Great Britain, Apr. 11, 1968, 17,663/68
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 10 Claims

An aircraft control system for enabling the aircraft to capture and follow a predetermined flight path, the system including means giving a displacement error signal which is a measure of the vertical displacement of the aircraft from the flight path, means giving a vertical velocity signal representative of the vertical velocity of the aircraft, a logic circuit for connecting the output of a pitch signal generator to the input

of the pitch control channel of the aircraft when the displacement error signal is equal to the vertical velocity signal, and



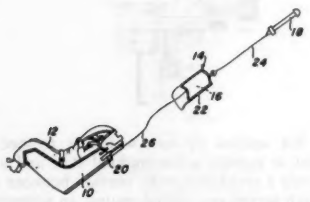
means for ensuring that there is no abrupt change in the pitch demand signal supplied to the pitch channel.

3,596,856

ASTERISK CONFIGURED DROGUE PARACHUTE

Gene R. Drew, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy.

Filed Dec. 15, 1969, Ser. No. 884,856
Int. Cl. B64d *17/02*
U.S. Cl. 244—145 **8 Claims**



A drogue parachute fabricated of elongated panels in a crisscross arrangement formi., an asterisk construction, the canopy being provided with wedge-shaped sectors attached at the confluence point of adjacent panels so that the parachute will exhibit increased drag forces at low speed and decreased drag forces at higher speeds hen compared with existing parachute stabilization systems presently in use.

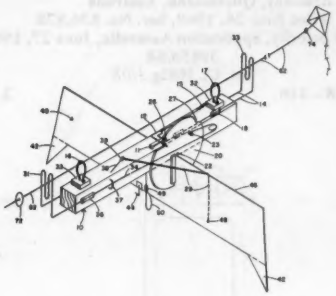
3,596,857

AUTOMATIC RECIPROCATING ACTION TOY GLIDER-KITE STRING FLYER

Willis R. Battles, 560 So. Helberta Ave., Redondo Beach, Calif.

Filed Jan. 28, 1970, Ser. No. 6,979
Int. Cl. B64c *31/06*
U.S. Cl. 244—155 **9 Claims**

A folding wing toy glider is suspended from, and rides up a kite string, propelled by wind acting upon the vertical surface of the down-folded wing, until a latch is released by contacting a stop, allowing wing to fold horizontally and the airplane to descend kite string under the influence of gravity until it contacts a lower stop whereupon the plane's momentum operates a mechanism cranking the wing back to its original vertical position, whereupon the up-down cycle is repeated automatically, as long as desired.

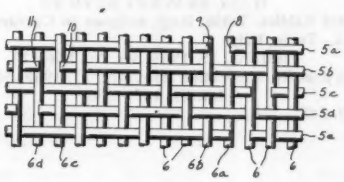


3,596,858

FOURDRINIER SEAM

Donald R. Curtis, Appleton, Wis., assignor to Appleton Wire Works Corporation, Appleton, Wis.

Filed May 2, 1969, Ser. No. 821,353
Int. Cl. B21f *15/00*
U.S. Cl. 245—10 **3 Claims**



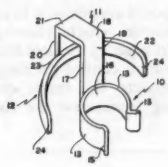
A seam for a Fourdrinier belt having interwoven warps and shutes in which the warps that terminate along the seam have their ends arranged on the wear side of the belt and positioned under one or more shutes extending across the seam.

3,596,859

LIGHT CLIP

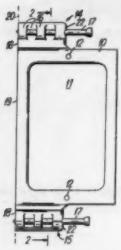
Grant MacDonald, 8 Frost Avenue, Winnipeg, 22 Manitoba, Canada

Filed Oct. 21, 1969, Ser. No. 868,027
Int. Cl. E04b *7/18;* **A47b** *97/00*
U.S. Cl. 248—214 **3 Claims**



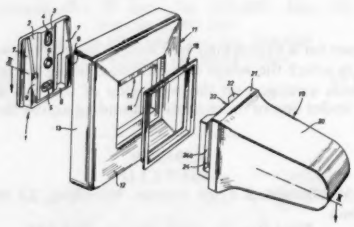
A clip for attaching decorative lights to eavestroughs which hooks over the front edge of the eavestrough, said clip having resilient jaws to receive the bulb holders of the light and an arcuately curved resilient rear strip engaging the inside of the eavestrough and holding the clip firmly on to the eavestrough regardless of different constructions of front edges of eavestroughs.

3,596,860
BRACKET FOR MOUNTING A FLUSH-TYPE ELECTRICAL PLATE
George MacKay, Corner Yacht Street & Gerald Avenue, Clontarf Brisbane, Queensland, Australia
Filed June 26, 1969, Ser. No. 836,878
Claims priority, application Australia, June 27, 1968, 39858/68
Int. Cl. H02g *3/08*
U.S. Cl. 248—216 **2 Claims**



A bracket for a flush-type electrical plate has extensions in which nails are held firmly but movably for driving into a wall stud. The nails are preferably held outside the periphery of the front mounting plate for easy accessibility.

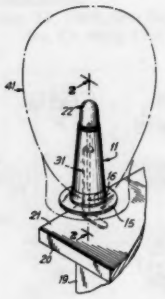
3,596,861
WALL BRACKET DEVICES
Giovanni Baldini, Turin, Italy, assignor to Carrara & Matta S.p.A., Turin, Italy
Filed Oct. 15, 1969, Ser. No. 866,627
Claims priority, application Italy, Dec. 23, 1968, 54414-A/68
Int. Cl. A47f *5/00*
U.S. Cl. 248—224 **1 Claim**



A wall bracket device comprises an assembly of three parts; a support plate which can be secured to a supporting surface, for example by screws and which has parallel slide guides normally disposed vertically; a bracket element having a rear part with grooves which interengage with the slide guides on the support plate by vertical sliding movement, and a boxlike frame having a central opening through which the bracket element projects, the frame covering the support plate and concealing from view the fixing means for the latter.

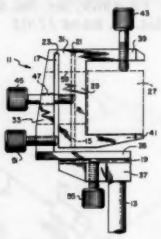
3,596,862
POST AND CLAMP ASSEMBLY
Charles Block, North Bellmore, N.Y., assignor to Crown Distributors, Inc.
Filed Dec. 8, 1969, Ser. No. 883,050
Int. Cl. D06c *15/00*
U.S. Cl. 248—226 A **2 Claims**

A post and clamp assembly especially suitable for supporting a wig form on a table or other flat surface so that a wig placed on a wig form can have work done thereto. The post and clamp assembly can be quickly mounted on and removed



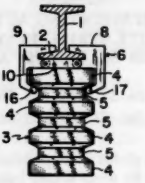
from a table edge and can accommodate a wide variety of table thicknesses.

3,596,863
FINE ADJUSTMENT MOUNT
Walter E. Kaspareck, Huntsville, Ala., assignor to The United States of America, as represented by the Administrator of the National Aeronautics and Space Administration.
Filed Jan. 28, 1969, Ser. No. 794,530
Int. Cl. G02b *7/00*
U.S. Cl. 248—278 **4 Claims**



A mount for optical devices which is formed with a horizontal slot or cutout, a longitudinal slot, and a vertical slot leaving only a small bridgelike portion between adjacent members which serves as a spring against an adjusting screw associated with each pair of members forming a slot. The most forward member adjacent the longitudinal slot has cantilevered arms to support the optical device.

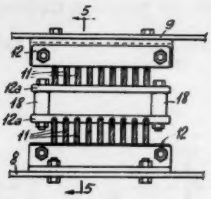
3,596,864
CLIP FOR ANCHOR BRICK
Roger C. Stephens, Hamburg, N.Y., assignor to Ferro Frontiers, Inc., Buffalo, N.Y.
Filed Apr. 11, 1969, Ser. No. 815,393
Int. Cl. F23m *5/02*
U.S. Cl. 248—317 **3 Claims**



A clip for securing anchor brick to a flanged beam comprising two arms joined by a pivot member. The arms are

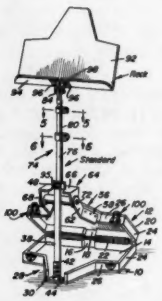
shaped to rotate into snug envelopment of the flange on the beam and thereafter to permit the sliding engagement of the anchor brick locking the clip on the beam.

3,596,865
METAL CABLE ABSORBER MOUNTING SYSTEM
Carlo Camossi, c/o Avv. Ravagli Via Corridoni, 6, Milan, Italy
Filed May 23, 1968, Ser. No. 731,513
Claims priority, application Italy, May 26, 1967, 807666/67
Int. Cl. F16l *15/04*
U.S. Cl. 248—358 **10 Claims**



A metal cable shock absorber mounting system between a vibrating member and a member to be damped, wherein at least one of the shock absorbing supports comprising a plurality of metal cables is free move independently of the member or element to be damped.

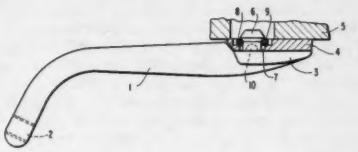
3,596,866
FOLDING MUSIC STAND AND CARRYING CASE THEREFOR
Donald B. Baker, Rte. 6, Box 380, Olympia, Wash.
Filed Feb. 11, 1970, Ser. No. 10,444
Int. Cl. A47b *97/06*
U.S. Cl. 248—461 **10 Claims**



A portable carrying case which when closed serves to store an attached music stand and when partly open provides a base. It comprises upper and lower boxlike sections hinged together. Each secton constitutes a tray. The lower section provides a self-standing base and stores a hinged leg which, in turn, serves as a prop and holds the sections a part. The adjustable music stand is integrally mounted on a handle-equipped yoke which is pivoted on paired adapter brackets carried by a median forward part of the openable and closable upper or cover section.

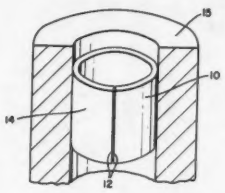
3,596,867
ATTACHMENTS FOR REARVIEW MIRRORS
Claes Vilhelm Allander, Stockholm, Sweden, assignor to AB Braas Spegelindustri, Brass, Sweden
Filed Aug. 7, 1968, Ser. No. 750,978
Claims priority, application Sweden, Aug. 18, 1967, 11,582/67
Int. Cl. B60r *1/04*
U.S. Cl. 248—475 **4 Claims**

An attachment for rearview mirrors in vehicles, comprising a plate fixedly secured to an arm for the mirror and a plate attachable to the vehicle. One of these plates has a projecting pin provided with a head, and the other plate has a recess corresponding to said pin and provided with bar springs at



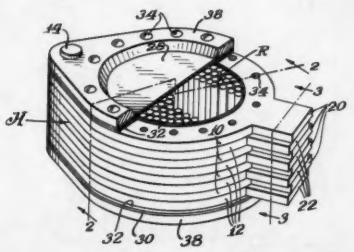
the edges of said recess. The two plates are also provided with one or more protuberances and depressions corresponding to each other and adapted to engage each other when the plates are secured to one another by means of said pin.

3,596,868
REFRACTORY HEAT INSULATING SLEEVE
Mario Pellanda, Milan, Italy, assignor to Foseco International Limited, Birmingham, England
Filed Jan. 12, 1968, Ser. No. 697,386
Int. Cl. B22d *7/10*
U.S. Cl. 249—106 **10 Claims**



Sleeves for thermally insulating the molten head metal in casting risers and ingot moulds are described in which the sleeve is formed incompletely, and has a gap running from top to bottom thereof. The sleeve may thus be sprung into place by closing the gap, inserting the sleeve and releasing it, so that it holds itself in position.

3,596,869
MOLD FORMING DEVICE
David H. Humphrey, G.P.O. Box 2226, San Juan, P.R.
Filed Mar. 10, 1969, Ser. No. 805,474
Int. Cl. B29c *1/00, 1/16*
U.S. Cl. 249—155 **15 Claims**



A mold forming device comprising a housing having open ends, a plurality of rods loosely filling the housing and individually adjustable longitudinally therein and means to constrict the inner dimension of the housing to lock the rods against longitudinal adjustment. The rods can be adjusted manually to create a molding surface of desired contour, or may be permitted to slide longitudinally and engage a physical surface, the shape of which is to be duplicated either

positively or negatively whereupon the rods are locked so that the housing and the adjusted rods may be used as a forming mold. By laminating the housing, alternate laminations thereof may be relatively offset to effect constriction of the inner dimension of the housing in relation to the rods for locking them against longitudinal adjustment.

To effect smoothing the molding surface presented by the ends of the rods, they may be covered by a flexible diaphragm. By having diaphragms at both ends of the housing and providing sealing means for the inner wall of the housing, the space among the rods may be evacuated for pulling the diaphragms at the ends of the rods into contact therewith.

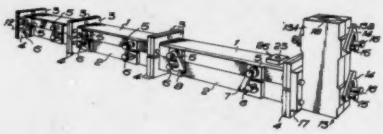
The housing and rods may be associated with vacuum-forming or pressure-forming chambers to hot-form sheets of plastic to the mold faces.

By providing rods of equal length, whenever they are adjusted to form one molding surface, either male or female, the other ends of the rods form a complementary female or male molding surface respectively.

3,596,870
CASING OF MOLTEN METAL

Edwin Walker, Don Foundry, Sheffield, England, assignor to John Fowler (Don Foundry) Limited

Filed Sept. 26, 1968, Ser. No. 762,874
Claims priority, application Great Britain, Nov. 9, 1967, 50927/67
Int. Cl. B22c *9/06*
U.S. Cl. 249—156 **7 Claims**

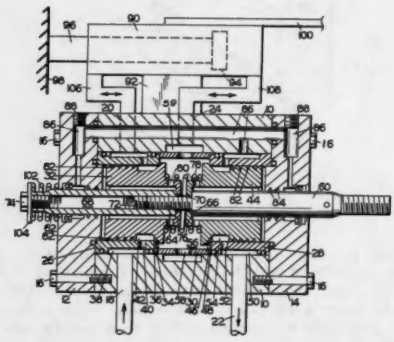


A metal mold for use in the horizontal casting of molten metal comprising at least one upper and at least one lower mold section removably secured together and to a vertical end section containing a pouring hole, the mold cavity forming a horizontal extension to the vertical pouring hole, and closure means for the end of the mold cavity remote from the end section.

3,596,871
TRACING VALVE

Arthur A. Rothrock, Portland, Oreg., assignor to Dupar Dynamics, Division of Palmer Supply Co., Portland, Oreg.

Filed Apr. 14, 1969, Ser. No. 815,770
Int. Cl. B23q *35/16;* **F16k** *11/10*
U.S. Cl. 251—3 **5 Claims**

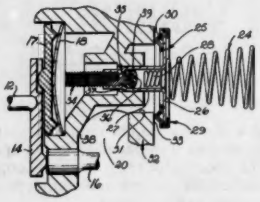


The hollow body of a fluid pressure tracing valve contains a pair of longitudinally movable, hollow poppet valves urged apart longitudinally by a spring. A pair of stem sections extend slidably through the hollow valves and are threaded together at their inner ends for adjusting the spacing between shoulders on said sections which confine between them projections on the pair of poppet valves. Valve seals on the poppet valves thus are adjustable relative to associated valve seats on the body.

3,596,872
VALVE ASSEMBLY

George P. Greenamyer, Monrovia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 25, 1970, Ser. No. 13,925
Int. Cl. F16k *31/44*
U.S. Cl. 251—77 **14 Claims**

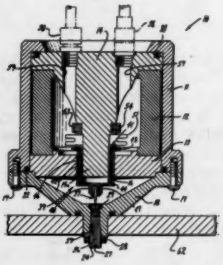


A valve assembly having a poppet with a hole all the way therethrough. A screw is threaded in the hole at one end of the poppet, but the screw head is positioned inside the hole so that access thereto is provided through the hole. After adjustment, the screw may be held in a fixed position by applying a sealing compound to it to bond it to the poppet. A valve is formed by snapping a rubber cover around a disc. The poppet may be made of a low cost, single metal stamping. The disc may, thus, be an integral portion of the poppet.

3,596,873
VALVE ASSEMBLY AND SERVO SYSTEM INCORPORATING SAME

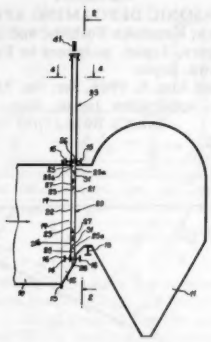
Eugene A. Eufusia, Santa Rosa, Calif., assignor to Optical Coating Laboratory Inc., Santa Rosa, Calif.

Filed Dec. 4, 1968, Ser. No. 781,150
Int. Cl. F16k *31/02*
U.S. Cl. 251—140 **10 Claims**



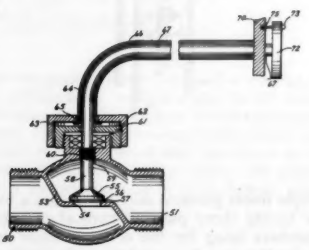
A valve assembly having a needle valve precisely positioned with respect to a needle valve seat by the use of a coil in a magnetic field and a servosystem including the valve assembly for precisely controlling the position of the needle valve to maintain a predetermined flow of fluid through the valve assembly.

3,596,874
SHUTOFF DAMPERS
Bartel J. Di Santo, Salt Lake City, Utah, assignor to American Smelting and Refining Company, New York, N.Y.
Filed June 20, 1969, Ser. No. 835,183
Int. Cl. F16k *3/18*
U.S. Cl. 251—175 **5 Claims**



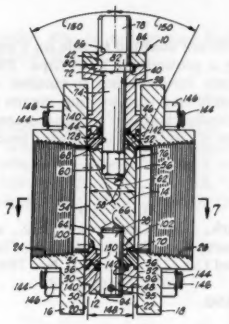
System for the gastight sealing off and isolating of a section or sections of a flue system, wherein a damper is movable in a guide frame secured to the flue between an open position and a closed position wherein the damper nongastightly closes off a section of the flue. A pressurizable chamber is defined within the damper and extends about at least an outer marginal portion of the damper, with at least that portion of one or both chamber sidewalls adjacent a seating surface of the frame and an edge of the flue adjacent the frame seating surface (when the damper is in the closed position) being yieldable. The introduction of fluid under pressure into the pressurizable chamber when the damper is in the closed position pressurizes the chamber and forces the yieldable sidewall portion or portions into a gastight sealing relationship with at least one of a seating surface of the frame and an edge of the flue adjacent the frame, thereby sealing off and isolating a section or sections of the flue. Consequently workmen may safely perform maintenance and/or repair work on the isolated section of the flue on the downstream side of the damper.

3,596,875
REMOTELY CONTROLLED FLUID VALVE
John R. Couper, Loveland, and Myer J. Schaffner, Arvada, both of, Colo., assignors to E-Z Serve, Inc., Arvada, Colo., by said Couper
Filed Jan. 30, 1970, Ser. No. 7,139
Int. Cl. F16k *5/00*
U.S. Cl. 251—294 **7 Claims**



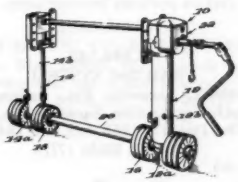
A remotely controlled fluid valve includes a rotatable valve member movable toward and away from a valve seat in the valve by rotation thereof, an elongated, flexible, rotatable member is secured to and extends from the stem of the valve providing means for rotating the valve member, thereby opening and closing the valve member on the valve seat. The unit may have the flexible rotatable member extending through a wall or other partition to provide a manually operated remotely controlled valve for hazardous locations and/or fluids. The valve member is readily biased into closed position.

3,596,876
DISC VALVE WITH UPSTREAM AND DOWNSTREAM SEATS
Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.
Continuation-in-part of application Ser. No. 823,378, May 9, 1969. This application July 11, 1969, Ser. No. 840,989
Int. Cl. F16k *1/22, 5/06*
U.S. Cl. 251—306 **16 Claims**



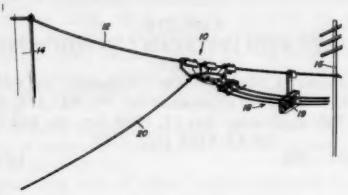
Improved seats for use with a disc valve having seating surfaces on both ends of the disc mating with upstream and downstream seats.

3,596,877
SCREW HOIST, ESPECIALLY FOR TRAILER LANDING GEAR
Budd Eastman, Holland, Mich., assignor to Holland Hitch Co., Holland, Mich.
Division of Ser. No. 691,603, Dec. 18, 1967, Pat. No. 3,518,890. Filed Dec. 17, 1969, Ser. No. 888,107
Int. Cl. B60s *9/02*
U.S. Cl. 254—86 R **8 Claims**



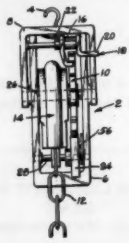
A special screw and nut assembly for operation under compression, especially as a hoist in a haulage vehicle landing gear, having substantially increased load supporting capacity and substantially greater ease of operation for elevating heavy loads, as a result of a combination of structural relationships. The threaded nut inner surface acts as a bearing bushing for the screw shaft by reason of minimal clearance between the screw core diameter and the nut root diameter, or less preferably between the nut thread full diameter and the screw outside diameter. The helix angle of both members is within a specific controlled range. The thread angle of both members is within a specific controlled range. The thread to shaft diameter is relatively large. The details of these and related features are set forth hereinafter.

3,596,878
CABLE GRIPPING TOWING DEVICE
Edward M. Parsen, Box 1061, Pierre, S. Dak.
Filed Sept. 29, 1969, Ser. No. 861,615
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3 7 Claims



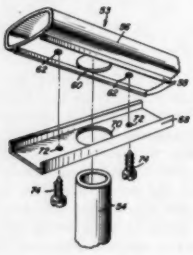
A cable tow device adapted to ride on a messenger cable is pulled along by a groundman's towrope. The device is provided with means for securing a number of signal cables thereto. Releasable one-way locking means mounted on the device automatically clamps it to the messenger cable whenever the towrope is slackened to prevent reverse movement.

3,596,879
CHAIN HOIST
Walter C. Clark, Fort Lauderdale, Fla., assignor to Aluminum Products, Inc., Fort Lauderdale, Fla.
Filed Oct. 22, 1968, Ser. No. 769,659
Int. Cl. B66d *1/36*
U.S. Cl. 254—190 10 Claims



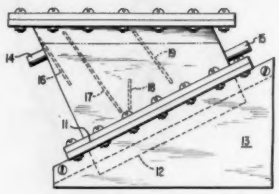
A chain hoist mechanism including an integral chain guide and load-lift, ratchet wheel. The chain guide is U-shaped and is supportably mounted on the ratchet wheel on supporting shoulders adjacent each side of the load-lifting portion. The chain guide is easily reversible for increasing operational lifetime when certain portions become worn.

3,596,880
RAILING SYSTEM
Morton Greenberg, Sarasota, Fla., assignor to American Metal Products Corporation, Sarasota, Fla.
Filed Dec. 17, 1968, Ser. No. 784,374
Int. Cl. E04h *17/14*
U.S. Cl. 256—65 3 Claims



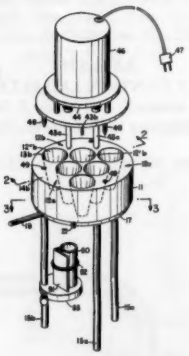
This disclosure pertains to railing systems comprised of extruded modular units which may be connected to form various lateral rail and post members. A first composite type construction is assembled by means of threaded fasteners. A second type is assembled by means of welded connections. In both construction types the connection means are concealed from view by means of dressing plates.

3,596,881
ULTRASONIC DEFOAMING APPARATUS
Norihisa Mimura; Kazutaka Yoshida, and Isao Tsuyuko, all of Machi, Ashigara, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan
Filed Aug. 8, 1968, Ser. No. 751,199
Claims priority, application Japan, Aug. 14, 1967, 42/52133
Int. Cl. B01f *15/00*
U.S. Cl. 259—2 7 Claims



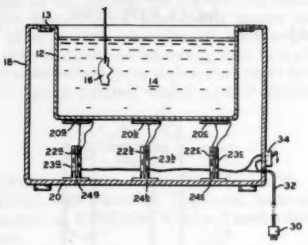
Increasing the defoaming capability of an ultrasonic defoaming apparatus by inclining the ultrasonic vibrating plate at an angle of between 10° and 30° to the horizontal plane while inclining the flow guide plates relative to the same plane.

3,596,882
MULTIPLE LINEAR GRADIENT MAKER
Peter Stanton Hoefer, 2609 California, San Francisco, Calif.
Filed Sept. 17, 1969, Ser. No. 858,779
Int. Cl. B01f *7/20*
U.S. Cl. 259—67 11 Claims



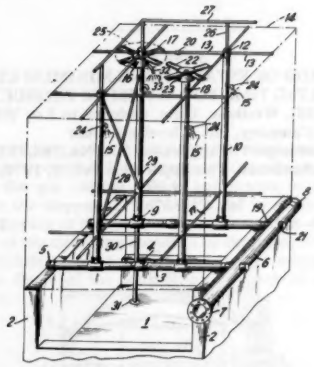
A multiple linear gradient maker includes a block of acrylic plastic having three pairs of conical chambers with the inner chambers being for the dense solution and the outer chamber for the less dense solution. Paddlelike stirrers are immersed in the solution in the inner chambers. A rotatable valve plate is mounted on the larger block to normally close off the lower openings of the chambers in a first position but when moved to a second position provides fluid communication channels between the chamber pairs. Outlet channels are also located adjacent the fluid communication channels to drain the fluid into test tubes.

3,596,883
ULTRASONIC APPARATUS
Kilian H. Brech, Norwalk, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.
Filed Nov. 8, 1968, Ser. No. 774,477
Int. Cl. B01f 11/02
U.S. Cl. 259—72 8 Claims



An ultrasonic cleaning apparatus has a plurality of electroacoustic transducers mounted to a container for providing ultrasonic energy to a liquid confined in the container. Each transducer is coupled to an individual electrical circuit for forming therewith a separate oscillatory circuit.

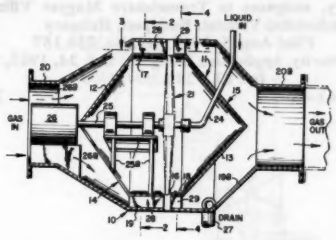
3,596,884
COOLING TOWER STRUCTURES
Edmund Murphy, Putney, London, England, assignor to Cooling Developments Ltd., Luzern, Switzerland
Continuation of application Ser. No. 674,184, Oct. 10, 1967, now abandoned. This application Nov. 25, 1969, Ser. No. 873,726
Claims priority, application Great Britain, Nov. 1, 1966, 48,859/67
Int. Cl. B01d 47/06
U.S. Cl. 261—25 3 Claims



A gas liquid contacting device, such as a cooling tower, which utilizes substantially vertical pipes to (i) distribute liquid to the device, and (ii) act as a structural support for the device. These pipes are interconnected by other pipes to allow liquid which is being passed into the device to be distributed into the substantially vertical pipes. The pipes may also be used as a support for one or more fans to move the gas.

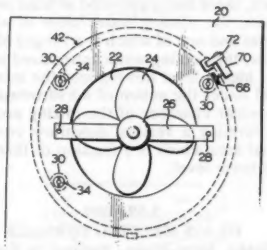
3,596,885
METHOD AND APPARATUS FOR SCRUBBING GAS
Arthur F. Stone, 186 Kings Road, Madison, N.J.
Filed July 24, 1968, Ser. No. 747,310
Int. Cl. B01d 47/18
U.S. Cl. 261—84 11 Claims

Gas to be scrubbed is conducted into an annular passage and through a rapidly rotating curtain of cleaning liquid provided across the passage by a rapidly rotating wheel issuing



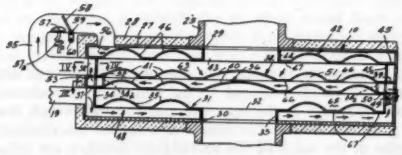
the liquid from radial jets, to entrap and thence drain out particulate matter from the gas.

3,596,886
HUMIDIFYING APPARATUS
John Trautman, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada
Filed Apr. 14, 1969, Ser. No. 815,721
Claims priority, application Canada, Dec. 6, 1968, 037,016
Int. Cl. B01d 3/04
U.S. Cl. 261—92 5 Claims



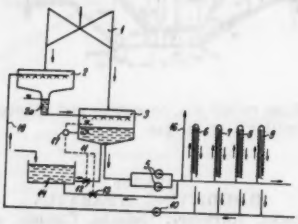
A humidifier contains a reservoir through which a porous medium mounted on a framework is rotated, air being blown through the porous medium to evaporate water therefrom. A ring of gear teeth is carried by the framework and the latter is driven by a gear that engages the ring and a motor that drives the gear. The shaft of the gear is inclined at an upward angle to a horizontal plane.

3,596,887
POST CARBURETOR FUEL CHARGE FORMING DEVICE
Robert L. Castine, Blue Island, Ill., assignor to D. Burnel Klopfenstein, Hammond, Ind., a part interest
Filed Aug. 1, 1968, Ser. No. 749,519
Int. Cl. F02m 23/14, 31/06
U.S. Cl. 261—145 9 Claims



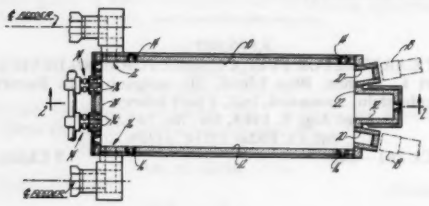
A device interposed between the carburetor and intake manifold of an internal combustion engine preventing raw fuel feed to the engine and supplying heated air to the fuel-air mixture from the carburetor for enhancing fuel combustion and engine efficiency and for minimizing air pollutants in the engine exhaust.

3,596,888
ARRANGEMENT OF MIXING CONDENSERS FOR STEAM TURBINE POWERPLANTS
Laszlo Heller; Laszlo Forgo, and Janos Bodas, all of Budapest, Hungary, assignors to Transelektro Magyar Villamossagi Kulkereskedelmi Vallalat, Budapest, Hungary
Filed Aug. 5, 1968, Ser. No. 750,157
Claims priority, application Hungary, Oct. 24, 1967, HE-507
Int. Cl. F28b 3/04, 5/00
U.S. Cl. 261—149 2 Claims



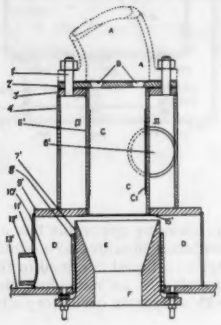
A system of mixing condensers is provided in which the water levels are maintained at various levels within portions of such mixing condensers connected in series in respect of cooling waters, there being provided at least one pair of mixing condensers, the cooling water sides of which are connected in series and one of which is arranged at a higher level than the other, the cooling water introduced into the mixing condenser of higher level flowing into the mixing condenser of lower level under the action of a hydrostatic pressure difference, the water chamber of the mixing condenser of the higher level forming a vertical downflow conduit having a cross-sectional area which is a fraction of that of the mixing condenser of lower level.

3,596,889
GLASS MELTING FURNACE
George F. Hanks, Avon, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Filed July 7, 1969, Ser. No. 839,156
Int. Cl. F27b 14/00
U.S. Cl. 263—11 3 Claims



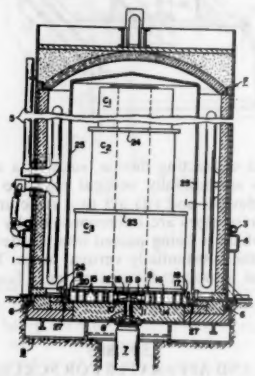
A rectangular furnace has openings at one end through which the batch material to be melted is introduced, and throat openings at the opposite end through which the molten glass can flow to forehearth and feeder installations. The lengths of the sides of the rectangular furnace are related to these opposed ends in the range of ratios between 3:1 and 4.5:1. The sole source of heat is provided by burners in the withdrawal end, so arranged as to fire upstream toward the batch charging end, a stack being located at the latter end to allow the products of combustion to escape from the furnace. The furnace roof provides a space for these combustion gasses above the melted and melting glass which has a constant vertical cross-sectional size throughout its length.

3,596,890
DRYING APPARATUS
Alastair G. M. Small, deceased, late of Kent, England (by Monica Mary Small, Executrix, 67 Hadlow Road, Tonbridge, Kent, England
Filed Feb. 17, 1969, Ser. No. 799,788
Claims priority, application Great Britain, Feb. 19, 1968, 7980/68
Int. Cl. F27b 15/00
U.S. Cl. 263—21 A 11 Claims



The drying apparatus of the invention incorporates two drying sections including cylindrical chambers through which the material to be dried is passed sequentially. Each drying section incorporates air nozzles arranged to discharge air tangentially inwards with respect to the axis of the associated chamber. The chamber of the second drying section in the series has heat radiating surfaces disposed in heat-exchanging relationship with the flues of a furnace the combustion air inlet of which is connected into the second drying section. Air is led to the air nozzles in proximity to the furnace flues so as to absorb heat on its way to the nozzles. Means is provided for removing dried material from the secondary drying section.

3,596,891
METHOD OF ESTABLISHING MINIMUM COIL ANNEALING TIME FOR MAXIMUM PRODUCTION
Robert R. Hill, Westlake, Ohio, assignor to Lee Wilson Engineering Company, Inc., Cleveland, Ohio
Continuation-in-part of application Ser. No. 764,192, Oct. 1, 1968, now abandoned. This application Feb. 9, 1970, Ser. No. 9,896
Int. Cl. F27b 11/10
U.S. Cl. 263—52 14 Claims



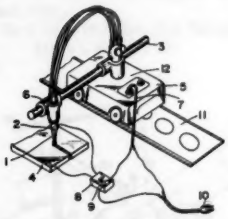
A process for determining the minimum length of time to operate an annealing furnace, such as a hood- or bell-type, to

anneal a charge of coils of strip metal, some of which may have different sizes or weights, wherein a size factor is established for each coil based on its size and weight and a weight factor is established for the total weight of the charge based on a predetermined temperature to which the charge is to be annealed. The time period for operating the furnace for such a charge of coils is substantially equal to the product of the total weight of the charge, the highest size factor noted, and the weight factor. As a convenient means of quickly determining these factors, families of curves graphically representing prior histories of annealing runs in a given type of furnace are constructed from which the values for the factors are easily and accurately noted and, if necessary, extrapolated.

3,596,892
AUTOMATIC GAS CUTTING DEVICE

Minoru Nakanishi, and Hidehiko Hayasaki, both of Tokyo, Japan, assignors to Kabushiki Kaisha Tanaka Seisakusho, Tokyo, Japan

Filed Dec. 9, 1969, Ser. No. 883,493
Claims priority, application Japan, Dec. 13, 1968, 43/90,919
Int. Cl. B23k 7/10
U.S. Cl. 266—23 M **6 Claims**



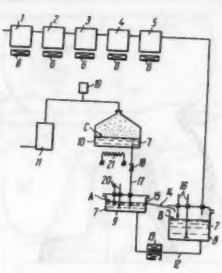
An automatic gas cutting device including means for detecting electromotive force produced across a preheating flame of the gas cutting device and means to control the running or the stopping of the device and to control the starting and stopping of the gas cutting automatically under an instruction of the detecting means. The detecting means based on a principle using a difference of the induced voltage across the flame of the gas cutting for each of the cutting conditions.

3,596,893
MERCURY PURIFYING PLANT

Vladimir Mikhailovich Foliforov, ulitsa Gorkogo, 145/4, kv. 85, Riga; Boris Nikolaevich Ukraintsev, ulitsa L. Paegle, 24, kv. 6, Riga; Viktor Georgievich Sirotenko, ulitsa Strelkovaya, 19, kv. 3, Riga; Aivar Eduardovich Tinte, ulitsa Moskovsk aya, 266/3, kv. 5, Riga; Boris Lvovich Birger, ulitsa Krasnoarmeiskaya, 6, kv. 3, Riga; Aivar Yanovich Vilnitis, ulitsa Daugavgrivas, 132/6, kv. 21, Riga; Nikita Mikhailovich Nadezhnikov, ulitsa Ersikas, 31, kv. 12, Riga; Mark Ilich Grinshtein, F. Engelsa, 19, kv. 13, Riga, and Sergei Lavrentievich Shashurin, Donetskaya oblast, ulitsa Sverdlova, 20, kv. 2, Gorlovka, all of, U.S.S.R.

Filed June 11, 1969, Ser. No. 832,232
Int. Cl. C21c 7/04
U.S. Cl. 266—34 **4 Claims**

A mercury purifying plant ensuring chemical or electrolytic purification of mercury followed by vacuum distillation, comprising a number of consecutively connected purifiers, an accumulating vessel, a vacuum evaporator, and a condenser. The vacuum evaporator of the plant is equipped with means for maintaining a constant mercury level in it,

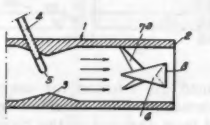


which ensures a high efficiency of the purification process and increases the output of the plant.

3,596,894
METHOD OF BLOWING FURNANCES AND SYSTEM FOR THE CARRYING OUT OF THE METHOD

Louis Duthion, Paris; Arsene Marzouvanlian, Plaisir, and Robert Augustin Chaube, Maule, all of, France, assignors to La Societe De Wendel, Paris, France

Filed Dec. 11, 1968, Ser. No. 782,860
Claims priority, application France, Dec. 13, 1967, Apr. 30, 1968, 132,105;150,195
Int. Cl. C21b 7/16
U.S. Cl. 266—41 **11 Claims**



A method has been provided for the operation of a blast furnace wherein air is introduced in the blast furnace through a tuyere zone and an air flow maintained at high velocity. This method comprises of introducing the supplemental fuel into said tuyere zone and admixing the same with the air flowing through the tuyere zone; maintaining at least one lower velocity turbulent zone in said tuyere zone, said lower velocity being in respect to the velocity of the flowing air and supplemental fuel admixture, said lower velocity turbulent zone initiating and sustaining the combustion of said fuel; and controlling the amount of supplemental fuel consumed in the tuyere by varying the distance of the turbulent zone in respect to the zone at which the air flow exists from said tuyere. Apparatus illustrating various flow retarding devices and thus flame source and fuel combustion control means also have been disclosed.

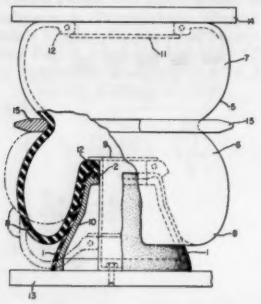
3,596,895
PROTECTIVE MEMBER

Arthur B. Hirtreiter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 14, 1969, Ser. No. 815,556
Int. Cl. F16f 9/04
U.S. Cl. 267—65 **23 Claims**

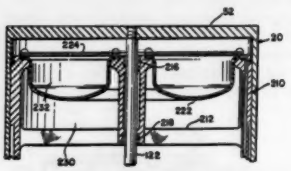
A protective member of flexible resilient material which is retained on the surface of a member of a fluid spring assembly to prevent the substantial accumulation of harmful

abrading debris which may damage the flexible resilient spring member during the operation of the spring assembly.



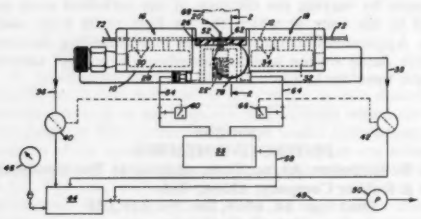
The protective member is particularly useful in a vehicle suspension system.

3,596,896
FLUID DIE CUSHION UNIT WITH AIR SAVER
Derald Henry Kraft, Canton, Ohio, assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.
Division of Ser. No. 653,116, July 13, 1967, Pat. No. 3,511,491. Filed Oct. 16, 1969, Ser. No. 871,334
Int. Cl. B21d *24/02*; F16f *9/04*; F11f *13/00*
U.S. Cl. 267—119 **2 Claims**



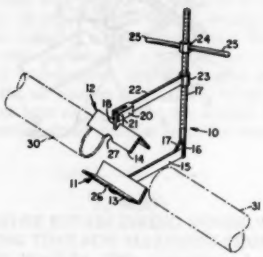
A self-contained die cushion for use on a power press wherein the normal cushion chamber includes a separate reservoir sealed from the rest of the chamber and having a movable wall in the form of a diaphragm and a fixed perforated wall to allow the fluid in the reservoir to assist in biasing the die cushion upwardly, but preventing exhaust of the reservoir when the chamber is exhausted to drop the cushion for changing or repairing dies in the press.

3,596,897
WEB SUPPORT AND ALIGNMENT STATION
Donald J. Lindsay, and Anopchand R. Vora, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed July 24, 1969, Ser. No. 844,586
Int. Cl. B25b *11/00*
U.S. Cl. 269—21 **10 Claims**



A web support and alignment station, particularly for splicing photographic film, comprising a track member having channel-shaped recessed web support surface with a width substantially equal to the width of the film being spliced. The track is divided along its length into first and second portions having a resiliently mounted film separator blade extending transversely of the film track therebetween. Means is provided for supplying a vacuum to each of the first and second portions of the track including first and second normally closed valves which are connected to a vacuum source. Pilot openings are disposed in the web support surface of the respective portions of the track immediately adjacent the separator blade and are both connected to a source of vacuum. Each pilot opening is provided with a vacuum responsive switch arranged, upon increased vacuum in the respective pilot opening, to open the respective normally closed valve to supply vacuum to the film support surface of the respective portion of the track. Thus, when a first and second strip of film are abutted against opposite sides of the separator blade, covering the pilot openings, vacuum is supplied to the film support surfaces holding the film strips in place for subsequent operations such as splicing.

3,596,898
FIXTURE FOR WELDING PIPES
Luell Hilburn, 7240 Manila Ave., El Cerrito, Calif.
Filed Mar. 7, 1969, Ser. No. 805,279
Int. Cl. B23k *37/04*
U.S. Cl. 269—243 **6 Claims**

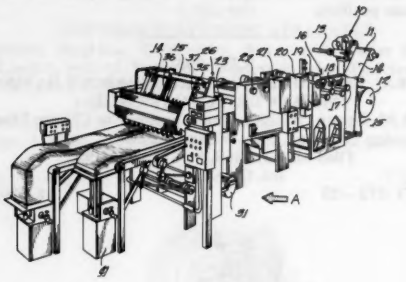


A fixture for retaining the ends of two pipe sections together during welding. The fixture comprises an upper clamp and a lower clamp, the lower clamp having an extension going out to one side and rigidly secured to an upstanding threaded rod. The upper clamp has an extension going out to one side and terminating in a sleeve which is slidable up and down on the threaded rod but is not threaded to it. A wing nut or nut with a handle is threaded on the rod above the sleeve of the upper clamp and is used to tighten that clamp into place to hold the pipe ends firmly between the two clamp members. Central portions of the clamps are recessed to give greater availability to the welding fixture before the pipe has to be turned, so that only one turn is usually required to weld the entire peripheries of the two pipes.

3,596,899
METHOD OF PRODUCING WEB UNITS
James B. Fulk, Monte Sereno, Calif., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.
Filed Sept. 18, 1969, Ser. No. 859,020
Int. Cl. B65h *41/00*
U.S. Cl. 270—52.5 **14 Claims**

A method of producing web units wherein at least two

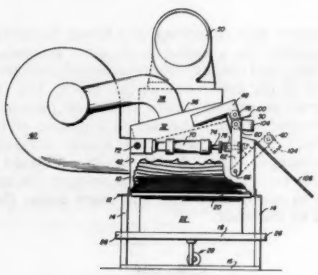
units are simultaneously processed while in superimposed relation, and thereafter the units are laterally separated -- the invention finding particular utility in connection with business forms.



3,596,900
SHEET MATERIAL DISPENSER

George H. Sundin, Duluth, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed Oct. 22, 1968, Ser. No. 769,624
Int. Cl. B65h *3/08*
U.S. Cl. 271—26 10 Claims



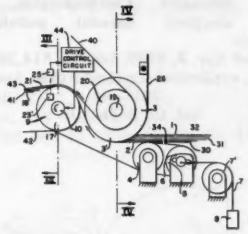
A dispenser for single sheets of material from a stack of such sheets is provided in which an air blower flutters at least the top portion of such a stack until the top sheet thereof reaches the intake manifold of the fan thus serving as a valve to shut off the flow of air and stop the fluttering of the top portion of the stack. Upon removal of the sheet from the intake manifold, either manually or automatically, the cycle is repeated.

3,596,901
SHEET SEPARATOR

Karl Rehm, and Hermann Schwarz, both of Konstanz, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Apr. 28, 1969, Ser. No. 819,712
Claims priority, application Germany, Mar. 24, 1969, P 19 14 839.1
Int. Cl. B65h *3/04*
U.S. Cl. 271—35 2 Claims

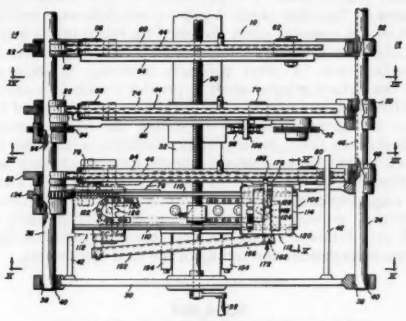
Apparatus for removing sheets one by one from a stack includes a transfer belt which engages one surface of a sheet on one end of a stack to remove it from the stack, and a convex surface stripper means disposed on the opposite side of the end sheet, the transfer belt looping about the convex surface for an angle which is greater than approximately 25° and pressing a sheet against it while it is being removed, so that the convex surface retards removal of adjacent sheets and separates the end sheet from the stack.



3,596,902
PRINTING PRESS NONSTOP SIDE REGISTER MECHANISM

Carl O. Siebke, Gulfport, Fla., assignor to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed Dec. 1, 1969, Ser. No. 881,102
Int. Cl. B65h *9/14*
U.S. Cl. 271—49 10 Claims



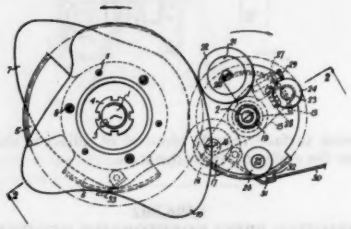
The side register mechanism has a feed board with endless tapes reeved about spaced pulleys for advancing the sheet toward the impression cylinder of a printing press. Endless driven chains with front stop members are arranged in parallel relation with the driven tapes. The tapes are driven at a slightly higher velocity than the chains to maintain the front edge of the sheet in abutting relation with the stops on the chains as the sheet is conveyed along the feed board. A side guide mechanism is arranged to advance with the sheet at substantially the same velocity as the sheet and has a pivotal finger member and an underlying plate member that move laterally relative to the feed board as the side guide mechanism advances toward the feed board delivery end. As the sheet is conveyed from the feed end toward the delivery end by the endless tapes, the side guide mechanism movable finger moves downwardly into abutting relation with the upper surface of the sheet and engages the sheet between the finger and the movable plate member. Both the sheet and the side guide mechanism advance at the same velocity toward the delivery end of the feed board and the finger and movable plate are moved laterally with the sheet therebetween until the side edge of the sheet abuts a side guide member. At this location the sheet is in side register. Continued advance of the side guide mechanism toward the discharge end of the feed board releases the sheet from between the finger and the movable plate.

3,596,903

ARRANGEMENT FOR GENERATING A NOT UNIFORM MOTION OF PRIMARY GRIPPING DEVICES PARTICULARLY FOR PRINTING MACHINES

Josef Jurny, Sebranice, Czechoslovakia, assignor to Adamovske strojirny narodni podnik, Adamov, Czechoslovakia

Filed Apr. 8, 1969, Ser. No. 814,381
Claims priority, application Czechoslovakia, Apr. 9, 1968, PV 2613-68
Int. Cl. B65h 5/12
U.S. Cl. 271—51 2 Claims



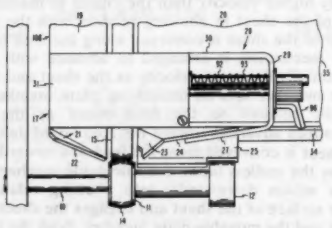
Intermittent feed means for printing machines and the like having a rotating cylinder and a rotating primary gripping feed arranged along a parallel axis thereto. The combination includes a drive shaft extending from the rotary cylinder having mounted thereon a first contoured cam and a pair of axially aligned segment gears. A mounting shaft extends from the rotating gripper feed and also has mounted thereon a pair of axially aligned gears. The gears on one shaft correspond to the gears on the other shaft. A pair of cam followers are fixed to one of the segment gears mounted on the rotating gripper shaft, the cam followers being adapted to engage their corresponding cam. A lever pivotally mounted at its center about the rotary gripper shaft is provided with still another pair of rollers at each of its ends and is spring biased with respect to the segment gear mounting the first mentioned cam followers. The driving shaft contains a control cam adapted to engage one of the rollers on the rotating lever arm. Rotation of the drive shaft causes the first cam and its three engaging cam follower rollers to effect an intermittent nonuniform motion in the rotary gripping feed while the fourth cam follower riding on the second of the cams regulates the engagement and timing of the first three cams.

3,596,904

MULTIWIDTH DOCUMENT STACKER

Marvin E. Nyberg, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 26, 1969, Ser. No. 836,775
Int. Cl. B65h 29/22
U.S. Cl. 271—80 4 Claims



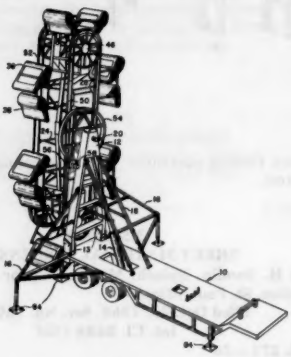
A longitudinal bend is applied to documents being delivered to a stacker by a device that must accommodate wide variations in document length, width and weight of document paper. A cupping drive roll and a cupping idler roll cooperate to transport a document to the stacker and impart a longitudinal bend to the document. A pair of cupping guides are disposed on opposite axial sides of the cupping idler roll with the idler roll and one cupping guide being selectively transversely movable. The adjusting mechanism requires disengagement of the idler roll prior to movement and maintains such disengagement during adjustment to an alternate position.

3,596,905

PLURAL HORIZONTAL AXIS ROUNDABOUT HAVING SHEAVE DRIVEN CARRIAGE

Joseph M. Brown, Wichita, Kans., assignor to Chance Manufacturing Company, Inc., Wichita, Kans.

Filed May 2, 1969, Ser. No. 821,398
Int. Cl. A63g 1/08
U.S. Cl. 272—29 6 Claims



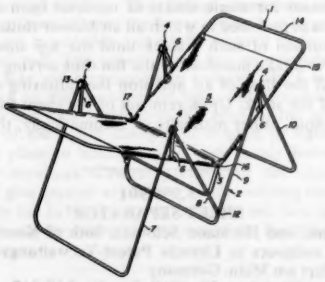
An amusement ride consisting of a tower movable from a horizontal position on a trailer to an erect position and including an elongated oblong structural member or boom centrally pivoted to the upper end of the tower. The structural member carries an oblong closed track and parallel endless conveyors trained around sheaves at opposite ends of the boom to which are attached frame means carrying freely swingable passenger cages. As the boom is rotated about a horizontal axis separate power means operate the conveyors and sheaves to move the frame and cages about the closed path defined by the track.

3,596,906

PORTABLE FOLDABLE EXERCISE COT

James E. Parmer, 4542 N. 18 Ave., Phoenix, Ariz.

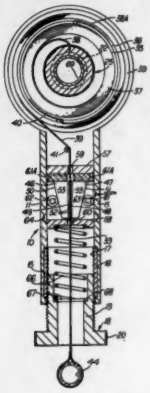
Filed Aug. 25, 1969, Ser. No. 852,765
Int. Cl. A63b 23/02
U.S. Cl. 272—58 1 Claim



A safer, stronger, more portable exercise device of the type supporting a jackknife motion cot on an M-shaped frame articulated at the points of the M. A novel articulated joint mechanism in the support frame, particularly at the superior points of the M, formed by two adjacent superior arms of the M-shaped frame being pivotally pinned together and having a cap stop member enclosing the pivot joint, thereby

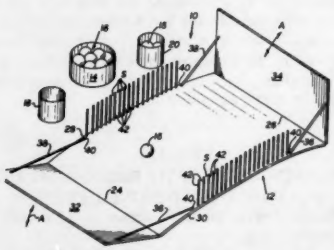
strengthening the joints, makes the device safer to operate, and permits it to be folded up into a more compact space.

3,596,907
FRICTION EXERCISING APPARATUS
Malcolm Brighton, Beckenham, Kent, and Walter Orner, London, both of, England, assignors to Scientific Exercising Equipment Limited, London, England
Filed Jan. 12, 1967, Ser. No. 608,777
Claims priority, application Great Britain, Jan. 19, 1966, Apr. 6, 1966, June 23, 1966, 2526/66;15368/66;28081/66
Int. Cl. A63b *21/02*
U.S. Cl. 272—83 A **7 Claims**



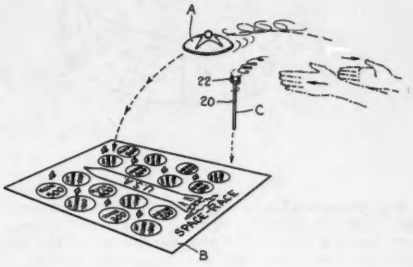
An exercising device including an elongated flexible member for mounting within a frame. Attempted relative movement of the flexible member with respect to the frame in one direction is opposed by a force which gradually increases to a predetermined level, at which level it remains upon further movement of the flexible member in the said one direction. No significant force opposes relative movement of the flexible member in the opposite direction. Means are incorporated for regulating and adjusting the predetermined level of the opposing force.

3,596,908
FLEXIBLE GAME BOARD WITH INTEGRALLY PIVOTED END FLAP PROJECTORS
John Arthur Long, and Chester F. Meyer, both of 35 Warren St., Brentwood, N.Y.
Filed Feb. 18, 1969, Ser. No. 800,195
Int. Cl. A63f *9/00, 7/10*
U.S. Cl. 273—85 C **9 Claims**



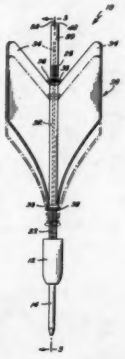
A ball or projectile-striking game having a centrally located flexible game board with flexible barrier elements upstanding along the opposite side edges, and projectile-striking flaps integrally connected at opposite ends of the game board which, in practice, are each manipulated by the players through a projectile-striking stroke to alternately strike the ball and thereby cause movement of the ball, during a typical playing interval, back and forth across the playing surface of the game board until one of the players either misses the ball or causes it to leave the playing surface. Resilient bands are connected between the flaps and the game board, and urge the flaps towards an overlying relationship with the game board.

3,596,909
PROJECTILE, LAUNCHER, AND TARGET
Marcus B. Russ, 218 W. Dorchester Blvd., Greenville, S.C.
Filed July 22, 1969, Ser. No. 843,709
Int. Cl. A63b *67/06*
U.S. Cl. 273—101 **2 Claims**



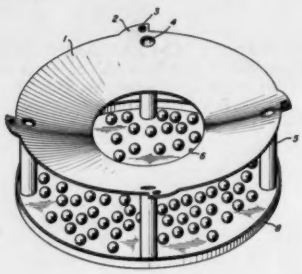
A game including a disc-shaped projectile which has a pair of recesses mounted in a base portion for receiving a pair of prongs carried on a launch stick. When the launch stick is rotated and released the disc-shaped projectile glides outwardly and downwardly towards a playing surface. The playing surface has indicia thereon indicating the landing areas of different points.

3,596,910
DART WITH LONGITUDINALLY ADJUSTABLE VANES
Bartolo Rizzo, Providence, R.I., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed June 13, 1969, Ser. No. 832,931
Int. Cl. A63b *65/02*
U.S. Cl. 273—106.5 R **1 Claim**



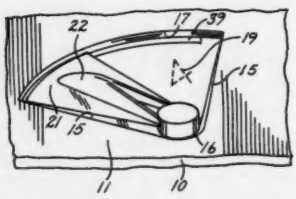
A dart construction comprising a pointed front portion having a shaft threadedly secured thereto and extending rearwardly therefrom. A vane assembly is slidably received on the shaft and is held in any given position by a pair of threaded collars. The shaft is threaded to allow longitudinal movement of the collars, but the rearmost section of the shaft is left unthreaded so the collars cannot be removed from that end of the shaft.

3,596,911
ENDLESS INCLINED RUNWAY BALL AND POCKET GAME
Elmer H. Kessler, Queen Anne Co., Centreville, Md.
Filed May 20, 1969, Ser. No. 826,177
Int. Cl. A63f *7/00*
U.S. Cl. 273—123 **1 Claim**



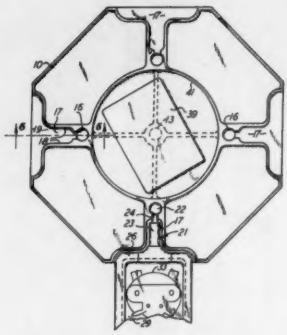
A game apparatus having a circular concaved surface having a centrally disposed opening, four evenly spaced extensions located around the peripheral edge of the surface to serve as tees, and four evenly spaced pocket openings located inwardly and adjacent the tees. Supporting the surface are four hollow open-ended pocket legs joining the underside of the surface such that the centerlines of the four-leg open ends and the four surface openings coincide. Spherical objects are propelled from the tees upon the concaved surface in an attempt to be rolled into the peripheral openings where they are retained in the support legs.

3,596,912
GAME BOARD WITH PIVOTED SHUTTER
Mark Herring, Scottsbluff, Nebr., assignor to James A. Warner and Margie Louise Warner, Scottsbluff, Nebr.
Filed June 19, 1969, Ser. No. 834,656
Int. Cl. A63f *3/06*
U.S. Cl. 273—135 BC **3 Claims**



A game board, for a Bingo-type game, is formed from a single plastic sheet by providing in the surface of the board a plurality of regularly spaced and arranged segmentally shaped recesses. Indicia are provided in each recess and on the game board for use in playing the game. Segmental or "fan-shaped" indicia covers are mounted in each recess and are adapted to be swung from side to side to selectively cover or expose the various indicia during the progress of the game.

3,596,913
APPARATUS FOR A GAME OF MATCHING PICTURES
Virginia A. Charves, 142 John St., East Providence, R.I.
Filed Mar. 16, 1970, Ser. No. 19,995
Int. Cl. A63f *1/10;* **A63h** *1/00*
U.S. Cl. 273—138 R **4 Claims**

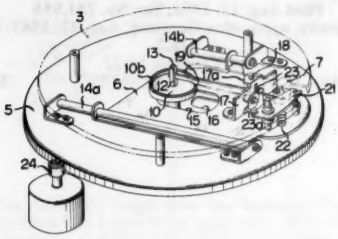


Two sets of picture cards having different items thereon but with the items being related between the two sets, such as an animal and its cage on two different cards. A spinnable cardholder supports the two different cards in positions such that when the holder is spun, a person gets one image of the animal within its cage. A base member supports the cardholder in the spinning position, and it also has means for supporting the cardholder in a second position. Rotatable support means are provided for the base member so that the base member and its cardholders can be rotated relative to the position of the players seated therearound. Each cardholder is provided with one picture, such as the animal cage, and the other set of cards has a related picture, such as the animal which belongs to the particular cage. The object is to select the correct card, with the selection being simply by chance rather than by intelligence or skill, and the selected card is then positioned in the holder already containing the cage card, and, upon spinning the holder and due to persistence of vision, the image of the animal within the cage is then seen and that player may be a winner depending upon the relationship of the animal to the cage.

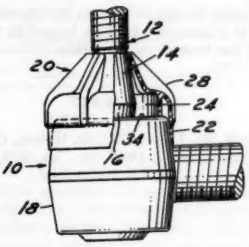
3,596,914
SPIRAL-TYPE MAGNETIC RECORDING AND PLAYBACK HEAD DRIVE DEVICE
Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Feb. 7, 1969, Ser. No. 797,511
Claims priority, application Japan, Feb. 16, 1968, 43/11,317
Int. Cl. G11b *5/82, 21/04*
U.S. Cl. 274—4 **4 Claims**

A spiral-type magnetic recording and playback head drive device, wherein the head is driven by an assembly composed of a rack and spiral grooves formed coaxially of the axis of rotation of the head for engagement with the teeth of the

rack. Upon completion of recording or playback, the rack is disengaged and returned to its initial position; and concurrently the head is spaced apart from a magnetic sheet while the head is returned to its normal position.

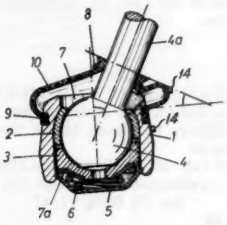


3,596,915
DUST SEAL FOR BALL JOINTS
Edward A. Snidar, Whitmore Lake, Mich., assignor to O & S Bearing & Mfg. Co., Whitmore Lake, Mich.
Filed Jan. 2, 1970, Ser. No. 282
Int. Cl. F16j *3/00*
U.S. Cl. 277—212 FB **12 Claims**



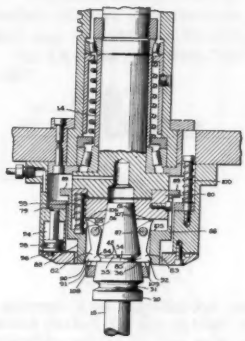
A dust seal for ball joint assembles of a type commonly used in motor vehicle steering linkages having external and internal ribs and primary and secondary sealing lips to prevent the dust seal from becoming damaged by entrapment between the ball stud member and the body of a joint assembly and to improve the sealing properties of effectiveness of the structure.

3,596,916
SEALING BELLOWS FOR BALL JOINTS
Rudolf Gottschald, deceased, late of Osterath, Germany (by Erika Gottschald, nee Schlenstedt, heir, of Am Meerbusch 4, 4151 Osterath, Germany)
Filed May 20, 1968, Ser. No. 730,520
Claims priority, application Germany, Apr. 23, 1967, P 16 00 452.7
Int. Cl. F16j *3/00*
U.S. Cl. 277—212 FB **2 Claims**



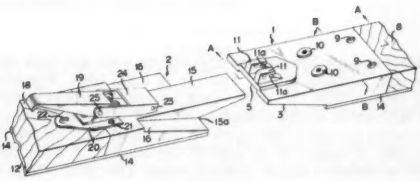
A sealing bellows for a ball joint having its ball stud normally eccentrically located with regard to the ball joint housing, in which said bellows is asymmetric with an unilaterally enlarged bulge.

3,596,917
TOOL ADAPTER
Henry F. Meyer, Liverpool, N.Y., assignor to The Monarch Machine Tool Company
Division of Ser. No. 614,483, Feb. 7, 1967, Pat. No. 3,466,971, which is a division of Ser. No. 309,700, Sept. 18, 1963, Pat. No. 3,316,629. Filed Feb. 17, 1969, Ser. No. 799,608
Int. Cl. B23b *31/04*
U.S. Cl. 279—89 **13 Claims**



The tool adapter may be used in a tool holder of a machine tool and with adapter holding a tool which may be different. The tool holder has particular use with automatic tool changers to axially and rotatively lock the tool adapter in the tool holder by quick and positive action. The tool holder may be an operative rotating spindle in a machine tool. The tool holder includes a chuck receptacle having pivoted latch levers to engage a tool adapter groove with a recess formed by flats on the surface of the groove. The latch levers grip these recess flats to rotatively and axially lock the tool adapter in the chuck receptacle. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,596,918
TAPERED TENON-TYPE COUPLING DEVICE FOR CONNECTING THE ELEMENTS OF TWO-PIECE SKI
Masaji Masuda, Tokyo, Japan, assignor to Mirion Kinsen Torokuki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 19, 1969, Ser. No. 808,520
Claims priority, application Japan, Dec. 28, 1968, 43/112,451
Int. Cl. A63c *5/02*
U.S. Cl. 280—11.13 K **5 Claims**

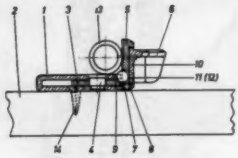


Tenon-and-mortise-type coupling device comprising two coupling members provided in the proximal free ends of the ski elements of a separate-type ski, respectively, ensures firm connection of the ski elements and enables the user to connect and disconnect the elements in one step without any troublesome connecting or disconnecting operation which is performed by the use of screws and a driver.

3,596,919
TOE IRON FOR SAFETY SKI BINDINGS

Gunter Adam, Straubing, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

Filed Dec. 16, 1968, Ser. No. 784,000
Claims priority, application Germany, Dec. 20, 1967, P 15 78 702.7
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 10 Claims

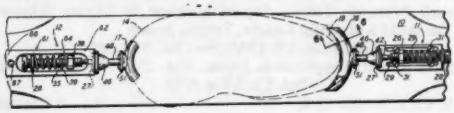


The soleholder is connected by a carrying member to a baseplate that is fixed to the ski. Forces which are harmless to the leg of the skier and act on the soleholder transversely to the longitudinal direction of the ski will be elastically taken up so that the toe portion of the boot will be moved substantially transversely to the longitudinal direction of the ski. The toe portion of the boot will be released by the soleholder after a transverse movement performed in response to a sustained action of a dangerous force. The carrying member is freely rotatably mounted on the baseplate and in its normal position is locked relative to the baseplate. The soleholder is mounted on the carrying member to be movable transversely to the longitudinal direction of the ski to both sides against the force of a spring. The carrying member is adapted to be released from the baseplate in response to the transverse movement of the soleholder.

3,596,920
ADJUSTABLE SAFETY SKI BINDINGS

Alan M. Haire, 276 South Sierra Blvd., Pasadena, Calif.

Filed Apr. 14, 1969, Ser. No. 815,963
Int. Cl. A63c 9/081
U.S. Cl. 280—11.35 T 3 Claims



Heel and toe binders are opposed on a ski and bear against the sole portions at heel and toe of a ski boot. The binders are substantially the same, each having a bracket sustaining an adjustable spring-loaded screw and a thrust member articulately joined to the screw. A universal joint on the thrust member is lodged in an arm of the bracket. A boot contact yoke is fastened to the thrust member. The yoke is adjustable perpendicular to the ski with respect to the thrust member. The yoke of the toe binder engages the top of the extending boot sole. The yoke of the heel binder engages the cable groove of the boot heel. Each binder yields to release the boot if pressure in excess of the spring loading on the thrust member impinges in either horizontal or vertical direction above the ski surface. The rear binder may have a horizontally extending lever which may be depressed at its rearward end by hand or by the ski pole to release the binding from the boot heel.

3,596,921
SAFETY SKI POLE

Franz Xaver Bruckl, 8116 Eschenlohe, Krottenkopfstrasse 50, Germany

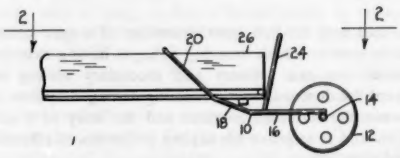
Filed Aug. 12, 1968, Ser. No. 751,955
Claims priority, application Germany, Aug. 17, 1967, P 15 78 728.7
Int. Cl. A63c 11/22
U.S. Cl. 280—11.37 L 2 Claims

A ski pole tube having at least in its intermediate portion a cross-sectional diameter which is larger in the direction of skiing than in the transverse direction.

3,596,922
UTILITY CART

Fred A. Luttrell, Rt. 1, Box 580, St. Helens, Oreg.

Filed June 2, 1969, Ser. No. 829,524
Int. Cl. B62b 1/00
U.S. Cl. 280—47.32 1 Claim



The cart of the invention includes a frame having a wheel at its forward end and a first frame portion extending rearwardly in substantially a horizontal plane from the wheel. An abutment is supported on said first frame portion. Second frame portions lead from the first frame portion in an outward and rearward flared direction and terminate in side arms leading upward and rearward. Leading inward from the upper ends of the side arms are lateral frame portions. The frame portions described form a rear opening arranged to receive longitudinally the forward end of a container to be seated forwardly against the abutment means. Upon mounting the container in the cart, the container can be wheeled like a wheelbarrow.

3,596,923
SUPPORT MEANS FOR AUTOMOBILE SUSPENSION

Iwao Nakamura, Tokyo, and Koichi Saito, Yokohama, both of, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

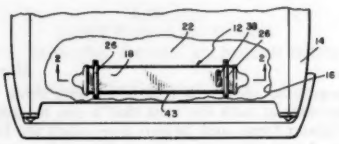
Filed Feb. 20, 1969, Ser. No. 800,878
Claims priority, application Japan, Sept. 26, 1968, 43/82970
Int. Cl. B60g 11/42
U.S. Cl. 280—124 3 Claims

A support adapted to absorb shocks and vibrations occurring in three different directions, vertical, lateral and longitudinal for example in an automobile suspension, comprises two spaced-parallel plates connected with one another by

three pins extending respectively through three flanged rubber bushings disposed between the plates and held in

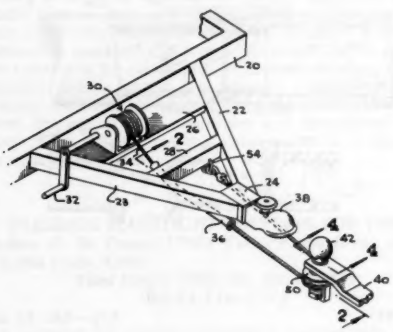
three collars of lesser length than the bushings. Two of the collars are fixed to a frame to be supported while the third is fixed to a support member, for example a leaf spring.

3,596,924
VEHICLE STABILIZER
Fred D. Watts, 1149 S. E. 20th, Oklahoma City, Okla.
Filed May 29, 1969, Ser. No. 828,826
Int. Cl. B62d *37/04*
U.S. Cl. 280—150 D **3 Claims**



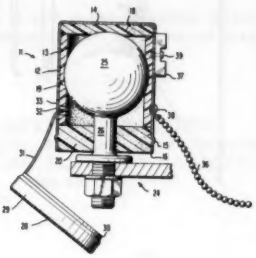
This invention is a vehicle stabilizer to be placed in the rear area of a vehicle operable on turning movement and/or stopping of the vehicle to move a weighted object to achieve greater wheel traction with the supporting surface. More particularly, this invention relates to the vehicle stabilizer including an actuator member mounted within oil in a housing means having the actuator member movable axially and rotatably about its axis to provide increased traction and prevent skidding of a vehicle during turning operations.

3,596,925
EASILY CONNECTABLE TRAILER COUPLING
Glen W. Richie, P. O. Box 26, Salem, Va.
Filed Sept. 10, 1969, Ser. No. 856,611
Int. Cl. B62d *53/00*
U.S. Cl. 280—477 **8 Claims**



A trailer coupling of the ball and socket type in which a ball-type male trailer connector is attached to a towing vehicle with a pulley being connected coaxially with the male connector so that a cable loop from the trailer can be looped over the pulley and tightened by a winch on the trailer for positioning a female trailer connector portion on the forward end of the trailer adjacent the male connector upon tightening of the loop by the winch.

3,596,926
TRAILER HITCH COVER
Richard R. Randall, 427 Kirk Road, Decatur, Ga.
Filed Aug. 19, 1969, Ser. No. 851,198
Int. Cl. B60d *1/00*; **B60s** *5/00*
U.S. Cl. 280—507 **1 Claim**

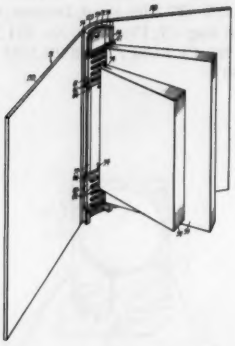


A trailer hitch cover for protecting the ball portion of a trailer hitch which comprises a cup-shaped cover member having a soft absorbent material applied to its inside surface and carrying a lubricant. A mass of flexible material is applied to the inside surface of the opening of the cover member which can be wedged about the ball portion of the trailer hitch and which functions to maintain the cover member over the ball portion of the trailer hitch. A tether is connected to the cover member for connection to a trailer hitch or a towing vehicle to maintain the cover member in the general vicinity of the ball portion of the trailer hitch at all times, and a magnet is connected to the outside surface of the cover member for releasably connecting the cover member to the vehicle or the trailer hitch. A closure cap is connected to the cover member for closing the cover member when removed from the ball portion of the trailer hitch to keep dirt, etc., from entering the cover member and contaminating the lubricant therein.

3,596,927
PRODUCTION OF 4-METHYLPENTENE-1
Willard N. Mitchell, Baytown; Armand M. Souby, Baytown, and Arthur B. Simmons, III, Houston, all of, Tex., assignors to Esso Research and Engineering Company
Continuation-in-part of application Ser. No. 693,728, Dec. 27, 1967, now abandoned. This application Oct. 10, 1969, Ser. No. 865,523
Int. Cl. C07c *5/24*
U.S. Cl. 260—683.2 **8 Claims**

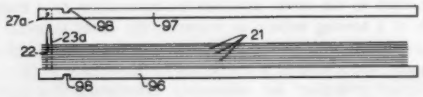
The production of 4-methylpentene-1 in increased yields is accomplished by the short-time (e.g., 0.1 to 10 seconds) contacting of 4-methylpentene-2 at elevated temperatures (e.g., 600 to 1200° F.) with a suitable isomerization catalyst (e.g., 0.5 to 1.5 percent KOH on alcoholate alumina). Yields as high as seven times greater than thermodynamic equilibrium amounts of 4-methylpentene-1 have been obtained.

3,596,928
BINDER
John R. Edmonds, 79 Rowell Ave., Camberwell, Australia
Filed July 3, 1969, Ser. No. 838,804
Claims priority, application Australia, July 3, 1968, 40,104/68
Int. Cl. B42d 1/06
U.S. Cl. 281—46 4 Claims



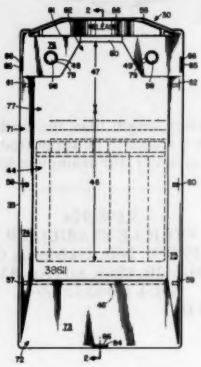
A binder having a foldable cover with webs extending across the inside of the spine. Magazines or folded sheets are bound by clipping them at top and bottom to the web with U-shaped clips.

3,596,929
BOOK FORMED OF PLASTIC STRIPS AND STUDS
William H. Abildgaard, Los Altos Hills, and Charles T. Groswith, III, Palo Alto, both of, Calif., assignors to Abildgaard Laboratories, Inc., Mountain View, Calif.
Filed Feb. 13, 1969, Ser. No. 799,045
Int. Cl. B42d 1/06
U.S. Cl. 281—21 9 Claims



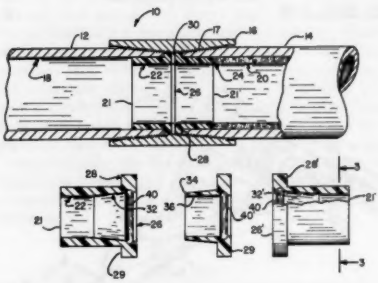
A first strip having longitudinally spaced, upstanding studs and a second strip having holes corresponding in spacing to and of a size slightly smaller than, the studs are used to bind sheets apertured adjacent one margin to receive the studs. Apparatus provides a support for the first strip with the studs fitting through the holes in the sheets. A retractable member which receives the second strip is slidable toward the first strip and compresses the sheets against the first strip. Shear means in the retractable member sever the excess length of the studs projecting through the holes in the second strip. The studs are then frictionally held by the second strip. Means is provided for more permanently holding the strips in position, as by deforming the ends of the studs. The product is a temporary or permanent binding for paper sheets apertured adjacent one margin having a first strip on one edge carrying studs projecting received in undersized holes in a second strip. The studs are cut off to length and temporarily held in the second strip by friction or by more permanent means involving deformation of the severed ends of the studs.

3,596,930
DISPOSABLE AUTOGRAPHIC REGISTER
Raymond D. Brown, Worchester Road, Hollis, N.H.
Filed Mar. 18, 1969, Ser. No. 808,076
Int. Cl. B41l 1/20
U.S. Cl. 282—12 B 10 Claims



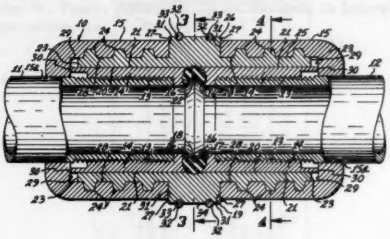
An autographic register is formed of only three molded, plastic elements at such low cost that it can be sold with a pack of register forms and thrown away when the forms are exhausted. A tray element contains the pack, a cover element contains the writing opening, and a partition element includes an unyieldable writing platen, beneath the writing opening, and an integral, hinge-pivoted, release tongue containing the usual register pins for individual and successive dispensing of the forms. The release tongue is separated by axially extending slits from the platen but connected thereto along a transverse web of the platen material, the web forming the hinge pivot line.

3,596,931
SEAL FOR LINED PIPE
Charles L. Mishler, Odessa, Tex., assignor to Armor Cote Corporation, Odessa, Tex.
Filed Feb. 10, 1969, Ser. No. 798,012
Int. Cl. F16l 9/14
U.S. Cl. 285—55 11 Claims



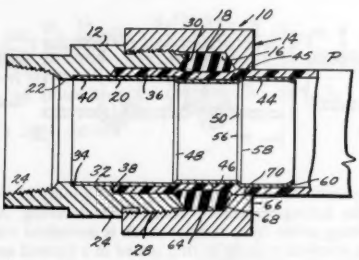
A deformable seal for protecting the exposed collar threads of a string of pipe having individual lined joints thereof joined together by a collar, wherein adjacent ends of the pipe joints have the seal interposed therebetween in a manner whereby the compressed seal prevents erosion or deterioration of the collar threads.

3,596,932
QUICK COUPLE UNION
Lewis R. Kinsey, 108 South 25th St., Phoenix, Ariz.
Filed Feb. 18, 1970, Ser. No. 12,250
Int. Cl. F16l 35/00
U.S. Cl. 285—81 4 Claims



A quick connect and disconnect pipe union characterized by a new type of water gasket and sealer arranged so the pressure of the water holds down the sealing gasket and by the use of special snap rings to lock the union elements demountably together.

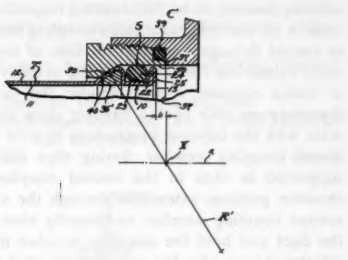
3,596,933
JOINT FOR PLASTIC PIPE
Lawrence F. Luckenbill, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.
Filed Nov. 5, 1969, Ser. No. 874,351
Int. Cl. F16l 11/04
U.S. Cl. 285—94 21 Claims



A joint for connecting a nonmetallic flareless plastic pipe or tube to fittings or metal pipes, the joint including two relatively movable members having a variable volume compression chamber therebetween, one of the members fixedly supporting a relatively rigid sleeve element insertable into the plastic pipe to provide a backing therefor. The sleeve element is provided with an annular recess on its exterior discriminately arranged with respect to length, depth and location relative to the compression chamber whereby a noncompressible annular gasket seal made of a deformable elastic material and positioned within the compression chamber will cause the plastic pipe to deform and completely fill the recess in the sleeve element without extrusion or thinning of the walls of the plastic pipe.

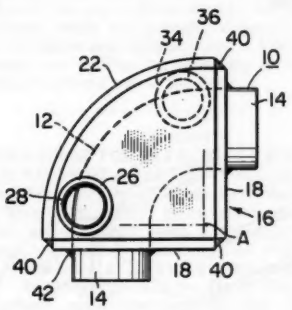
3,596,934
FLEXIBLE FLUIDTIGHT COUPLING FOR TUBES
Herbert A. De Cenzo, 17901 Yorba Linda Blvd., Apt. 20, Yorba Linda, Calif.
Filed May 6, 1969, Ser. No. 822,240
Int. Cl. F16l 27/12
U.S. Cl. 285—165 18 Claims

A coupling for tubular members in mechanically flexible fluidtight relation, and providing cooperative means permitting limited axial, angular, and longitudinal misalignments; while maintaining positive mechanical interengagement of at least one tubular member with a cooperating coupling member and with the assurance of fluidtight conduction therebetween. It is lightweight, thin-walled, metallic piping of the aircraft type with which the present invention is particularly concerned, and with the unique adaption thereto of elastomeric O-ring seals operable within uninterrupted



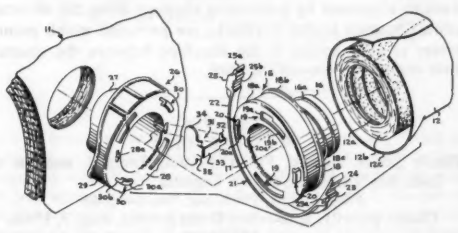
cylindrical walls, as well as the adaptation thereto of sealing glands of varied materials and having varied sealing configurations.

3,596,935
JACKETED PIPE FITTING
George McGeoch, Sr., 502 Manor Road, Cinnaminson, N.J.
Filed Mar. 12, 1969, Ser. No. 815,243
Int. Cl. F16l 39/00
U.S. Cl. 285—133 12 Claims



An assembly of plate members welded together and to the main body part of a pipe fitting provide a fluidtight jacket completely encompassing said main body part of the fitting.

3,596,936
QUICK CONNECT AIR DUCT FITTINGS
John J. Dieckmann, Harrisonburg; Donald V. Bowman, Dayton, and Anthony M. Castello, Harrisonburg, all of, Va., assignors to Dunham-Bush, Inc., West Hartford, Conn.
Filed Nov. 6, 1969, Ser. No. 874,472
Int. Cl. F16l 39/00, 59/00
U.S. Cl. 285—149 10 Claims



A quickly connectable attachment system for joining a smaller air tube to a larger cylindrical duct at one end and to

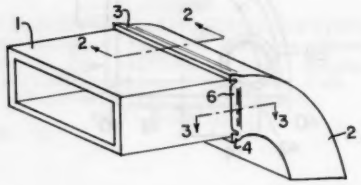
an annular terminator device at the other end, including a molded plastic coupling member having coaxial neck and outer cylindrical flange portions with a circular face plate portion therebetween having bayonet slot and protrusion formations thereon, to be fitted on the respective ends of the air tube. A similar integral molded coupling member has a neck to extend through a hole in the side of the larger duct, an outer cylindrical flange to abut the exterior wall of the duct in sealed relation, and a circular flat face plate portion therebetween also having bayonet slots and protrusions to mate with the bayonet protrusions in slots of the first mentioned coupling member. Spring clips slidably and tiltably supported in slots in the second coupling member have shoulder portions extendible through the air passage in the second coupling member to inwardly abut wall portions of the duct and hold the coupling member in place. The terminator device also has a surface to abut the face plate of one of the first coupling members and bayonet protrusions to interfit in bayonet slots of the first coupling member as well as spaces to receive the bayonet protrusions of the first coupling member.

3,596,937

INTERLOCKED WAVEGUIDE ASSEMBLY

Joseph F. Baldelli, Marlboro, Mass., assignor to Microwave Development Laboratories, Inc., Needham Heights, Mass.

Filed Nov. 20, 1969, Ser. No. 878,318
Int. Cl. F16l *13/08*
U.S. Cl. 285—287 **5 Claims**



A self-aligned waveguide assembly is constructed of interlocked sections of hollow rectangular waveguide which are abutted end to end. The abutted ends of the sections are interlocked by dovetailing the sections along the broad walls of the waveguide in a manner insuring alignment of the broad walls. One of the mated sections has locating tabs extending from its narrow walls. The tabs overlap the narrow walls of the adjacent interlocked section and maintain the narrow walls in alignment by preventing slippage along the dovetail joint. Channels in the interlocks are provided which permit solder to have access to the interface between the abutted ends completely around the joint.

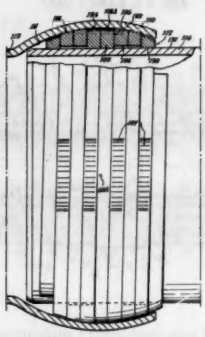
3,596,938

FLEXIBLE JOINT

Henry James Tizzard, Filton, Bristol, England, assignor to Rolls-Royce Limited, Derby, England

Filed Aug. 4, 1969, Ser. No. 847,248
Claims priority, application Great Britain, Aug. 3, 1968, 37137/68
Int. Cl. F16l *17/02*
U.S. Cl. 285—231 **4 Claims**

The disclosure of this invention pertains to a joint comprising an outer part, an inner part and a junction piece between said parts in the form of a coiled spring having at least one



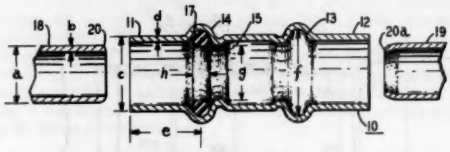
turn engaging only the outer part and at least one turn engaging only the inner part.

3,596,939

TUBE JOINT HAVING SEALING AND CRIMPING MEANS

Glenn J. Gibson, 97 Beech Ave., Berkeley Heights, N.J.

Filed Aug. 15, 1968, Ser. No. 752,842
Int. Cl. F16l *13/14*
U.S. Cl. 285—382.2 **3 Claims**



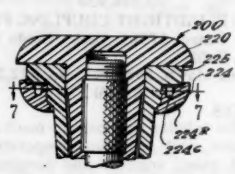
An apparatus is disclosed for simplified joining of sections of metallic tubing, especially stainless steel tubing. A thin-walled fitting made from tubular stock is described which in one form involves a single O-ring seated in a formed annulus, and a ridgelike stop adjacent to the annulus. The inside diameter of the fitting provides a small clearance with the tube to be joined. The tube section is inserted into the fitting by hand, compressing the O-ring to form the seal. The tube section abuts the stop, and in this position the joint is locked as by crimping the fitting sleeve so that it engages the tube section.

3,596,940

SNAP-FIT CONNECTION

Laurence G. Horwitt, 226 Fountain St., New Haven, Conn., and Donald J. Mattis, 15 Douglas Drive, Norwalk, Conn.

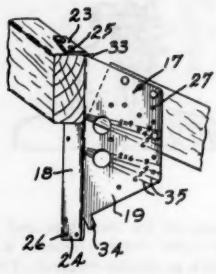
Filed Mar. 9, 1970, Ser. No. 17,718
Int. Cl. F16b *9/00*
U.S. Cl. 287—20 R **11 Claims**



Snap-fit connection for piece parts of hard material. Shoulders of opposite bevel that border an annular ring portion of

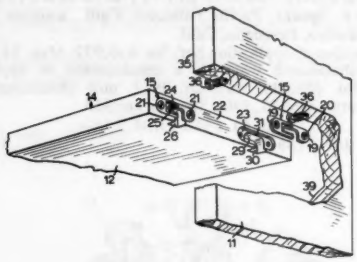
one of the parts engage in wedgelike fashion shoulders of opposite bevel that border an annular recess portion of the other part.

3,596,941
SELECTIVELY ADJUSTABLE ROOF BRACKET
Charles W. Tracy, Tallahassee, Fla., assignor to International Enterprises, Inc., Tallahassee, Fla.
Filed Sept. 2, 1969, Ser. No. 854,401
Int. Cl. F16b *7/00*
U.S. Cl. 287—20.94 **5 Claims**



Apparatus applicable to the roof beams of a building under construction and having selectively adjustable means for supporting rafters of varying sizes and at varying angular positions or pitches in a way that uncut rafters can be applied by unskilled workmen.

3,596,942
SECUREMENT APPARATUS
Robert G. Zoebelein, c/o Reff Products Limited, 91 Milvan Drive, Weston, Ontario, Canada
Filed Sept. 12, 1969, Ser. No. 857,476
Int. Cl. F16b *9/00*
U.S. Cl. 287—20.924 **12 Claims**

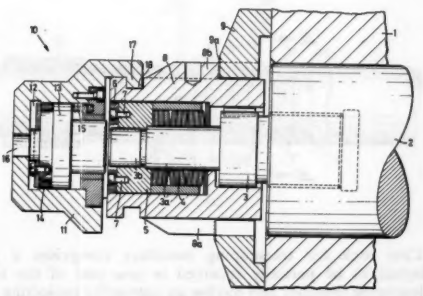


Two detachably securable structural members, such as a shelf and end wall of a bookcase, the shelf having securement plates mounted on an end face thereof with an L-shaped slot being formed through each plate and into the associated end face of the shelf. One end of each slot is closed, and the other end thereof is open at an edge of the plate and shelf, the slot being of undercut form at least adjacent to its closed end and being of such dimensions that a securement member which projects from the end wall of the bookcase may be slidably moved through the slot from its open end to its closed end. Each securement member has a head and a shank, the head, when he member is at the closed end of the associated slot, being disposed within the wider part of the undercut portion of the slot with the shank projecting through the part of the slot formed through the plate. This latter part of the slot is at least at the undercut portion of the slot of less width than the head. In passing from the open end to the closed end of the slot the head moves over an inclined portion and on to a portion parallel to the end face of the shelf whereby this face of the shelf and the end wall of the bookcase are urged together during this movement.

3,596,943
SHAFT MOUNTINGS FOR PULLEYS, SHEAVES AND THE LIKE
Walter Francis Krauss, Natalia Ave., Huntingdale, Victoria, Australia
Filed Sept. 30, 1969, Ser. No. 862,404
Claims priority, application Australia, Oct. 3, 1968, 44285/68
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.06 **5 Claims**

A shaft mounting having a sleeve which fits over the shaft and which has a tapered external surface engageable within a hub portion of the part to be secured to the shaft, and an annular element which is engageable externally over the hub portion, the sleeve and annular element being movable axially towards one another by tightening of screws engaged therewith to fasten the hub to the shaft.

3,596,944
DEVICE FOR THE DETACHABLE FIXING OR LOCATION OF A PART ON A PIN OR SHAFT
Karl-Heinz Ecker, Erkelenz/Rhineland; Matthias Dortans, Erkelenz/Rhineland; Helmut Henschenmacher, Brachelen/Rhineland, and Karlheinz Wahl, Erkelenz/Rhineland, all of, Germany, assignors to Maschinen-Und Bohrgerate-Fabrik Alfred Wirth & Co. KG., Erkelenz/Rhineland, Germany
Filed Mar. 26, 1970, Ser. No. 22,910
Claims priority, application Germany, Mar. 31, 1969, G 69 12 970
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 **10 Claims**



This invention relates to a device for detachably fixing or locating a part on a pin or shaft by means of a locking ring engaging with the part to be fixed or located, the locking ring resting against a support displaceable in relation to the pin or shaft and acted upon by a spring, while the support can be moved by the action of a pressure medium against the force of the spring so as to enable the locking ring to be released and in which a special actuator is provided for moving the support against the spring force.

3,596,945

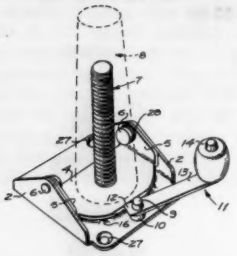
LOCKING CONNECTOR FOR FOLDING FURNITURE LEGS

Richard L. Mulvin, 706 LaPortada, South Pasadena, Calif.

Continuation-in-part of application Ser. No. 678,919, Oct. 30, 1967, now abandoned. This application Mar. 20, 1969, Ser. No. 808,978

Int. Cl. F16c *11/00*

U.S. Cl. 287—99 3 Claims



A locking connector, primarily intended for folding furniture such as tables and chairs, which includes a mounting plate for attachment to the flat undersurface of a table top or chair seat and having a pair of side flanges for mounting an essentially channel-shaped fixture. In one embodiment, the connecting web supports a screw-threaded dowel to receive a round furniture leg; and in another embodiment, one flange and a portion of the connecting web is extended for attachment to a square furniture leg. The mounting plate carries a latching lever and the fixture is provided with a cooperating surface for locking the fixture in perpendicular relation to the mounting plate.

3,596,946

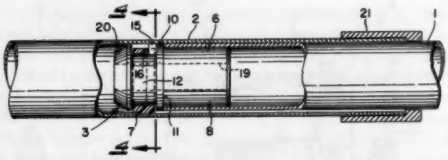
CAM LOCK FOR TELESCOPIC MEMBERS

Charles A. Burton, Worthington, and Howard C. Davis, Columbus, both of, Ohio, assignors to The Wooster Brush Company, Wooster, Ohio

Filed Mar. 9, 1970, Ser. No. 17,514

Int. Cl. F16b *7/10*

U.S. Cl. 287—58 9 Claims



Cam lock for telescoping members comprises a plug adapted to be partially received in one end of the inner telescoping member and having an outwardly projecting portion containing an eccentric groove for receipt of a correspondingly shaped eccentric collar or ring. Rotation of the collar within the groove is limited between an eccentric position frictionally engaging the outer telescoping member and a concentric position permitting relative movement between such telescoping members by a projection or stop in the plug groove extending into a slot in the collar to obtain unidirectional locking and unlocking of the outer telescoping member with respect to the inner telescopic member upon relative rotation of such members in opposite directions.

3,596,947

SECURITY CONNECTOR FOR INSULATORS AND FITTINGS THEREOF

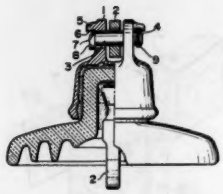
Masamichi Ishihara, Ama-gun, Aichi Prefecture, Japan, assignor to N.G.K. Insulators, Ltd., Nagoya, Japan

Filed July 28, 1969, Ser. No. 845,261

Claims priority, application Japan, Oct. 3, 1968, Nov. 28, 1968, 43/85,748; 43/103,214

Int. Cl. F16c *11/00*

U.S. Cl. 287—100 12 Claims



A security connector for insulators and fittings thereof, which connects a clevis and a tongue by a clevis pin. The clevis has a clawlike projection integrally formed therewith, which engages a cutaway portion of the pinhead of the clevis pin when the connector is loaded, so as to hold the clevis pin in position. The cutaway portion of the pinhead also allows the insertion of the clevis pin into the connector without striking the projection of the clevis by the pinhead. The clevis pin can have a stop lug integrally formed on the opposite end of the clevis pin to the pinhead, which stop lug is small enough to allow the insertion of the clevis pin into the clevis and the tongue but large enough to engage the clevis surface when the connector is not loaded, so as to prevent the axial movement of the clevis pin. With the security connector, the risk of dripping of powerline conductors can be eliminated.

3,596,948

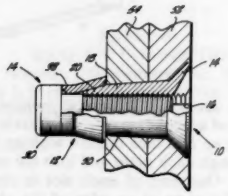
BLIND FASTENER AND BLIND FASTENER SYSTEM

Thomas F. Spoehr, Pacific Palisades, Calif., assignor to VSI Corporation, Pasadena, Calif.

Continuation of application Ser. No. 810,922, Mar. 24, 1969, now abandoned which is a continuation of application Ser. No. 685,386, Nov. 24, 1967, now abandoned. This application Oct. 27, 1969, Ser. No. 869,958

Int. Cl. F16b *13/06, 33/04*

U.S. Cl. 287—189.36 3 Claims



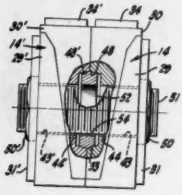
A three-piece blind fastener, having a nut with a longitudinally tapered intermediate portion, a core bolt and an expansible sleeve, is set in two or more sheets of material having a tapered hole by drawing the core bolt's head toward the blind side of the sheets, engaging the sleeve with the head and expanding it over a nose on the nut until the sleeve engages the blind side. When set, the longitudinally tapered intermediate portion of the nut is in interference engagement with the tapered hole in the sheets.

3,596,949

CONNECTOR FOR MODULAR BUILDING SECTIONS

Russell L. Turpen, 2200 Central St., Richmond, Calif.

Filed June 25, 1969, Ser. No. 836,344
Int. Cl. F16b 7/18
U.S. Cl. 287—189.36 12 Claims



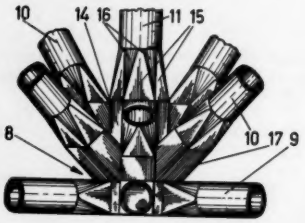
A connector for use in joining frame elements; floor, ceiling, and sidewall sections; and like components of modular building structures. The connector comprises a pair of connector members or components adapted to be secured to each other in a predetermined orientation of mating juxtaposition. One of the components is a joist connector adapted to have two floor or ceiling joists attached thereto at a relative angular orientation of about 90°, and the other such component is a column-connector member adapted to have a column attached thereto at a generally normal disposition relative to the plane defined by the joists. Position-enforcing structure establishes the desired predetermined orientation of the two connector members, and bolt-type fasteners secure the same in such orientation.

3,596,950

JOINTS FOR BRACING MEMBERS

Johannes Wipkink, Sassenheim; Marinus Van Holst, Massluis, and Johan Gerhard Wolters, Massluis, all of, Netherlands, assignors to Ingenieursbureau Marcon N.V., Hague, Netherlands and Scheepsbouwbelange N.V., Hague, Netherlands

Continuation-in-part of application Ser. No. 341,501, July 1, 1968, now abandoned. This application Feb. 13, 1970, Ser. No. 11,245
Int. Cl. F16b 7/00
U.S. Cl. 287—189.36R 7 Claims



A common joint assembly for a plurality of converging bracing members in an open support structure, such as an offshore drilling platform, including a polyhedral-shaped core and transition pieces for connecting each bracing member to a polygonal face of the core. Each transition piece has a larger cross section at the core than at the bracing member and has at least in part plane sides.

3,596,951

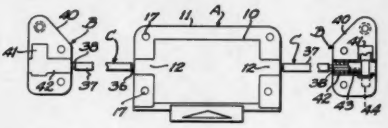
WITHDRAWN

3,596,952

LATCH ASSEMBLY

Ewan M. Hinkle, Laguna Niguel, and David E. Hall, Costa Mesa, both of, Calif., assignors to Shur-Lok Corp.,, Santa Ana, Calif.

Filed May 15, 1970, Ser. No. 37,579
Int. Cl. E05c 9/08, 9/14
U.S. Cl. 292—27 7 Claims



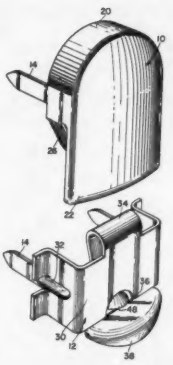
A slide button actuates a bellcrank or pair of bellcranks which in turn latch or latches by converting the linear motion of the slide button to rotary motion and transmitting this motion through connecting rods to the latch or latches. The button, its housing, the bellcranks and rods are embodied in a planar assembly which can be quite thin for maximum concealment in a door panel or the like.

3,596,953

LEATHER GOODS CLASP

Andre Gastaldi, Fontaine, France, assignor to A. Raymond, Grenoble, France

Filed May 21, 1969, Ser. No. 826,559
Claims priority, application France, Dec. 3, 1968, 176,365
Int. Cl. E05c 19/06
U.S. Cl. 292—87 6 Claims



This invention is directed at a clasp including a female member having the form of an inverted cup which extends toward the male member. The female member has a hood terminated by a flange under which a male beak of attachment can lock and has lateral tabs insuring the guidance of the male element when the clasp is being closed. The male element of the clasp includes a plate having substantially the form of a T whose crossbar forms a trigger guard designed to be fixed to the article to which the clasp is fitted, and a leg bent under the guard in such a way as to project beyond the latter with its end forming the attachment beak and also serving as a key for opening the clasp.

3,596,954

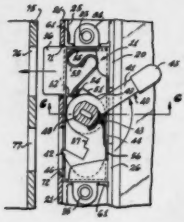
UNIVERSAL SLIDING DOOR HANDLE AND LATCH ASSEMBLY

Ben A. Hull, Van Nuys, and Bernard C. Governale, Covina, both of, Calif., assignors to W & F Manufacturing, Inc., Glendale, Calif.

Continuation-in-part of application Ser. No. 805,782, Mar. 10, 1969, now abandoned. This application Sept. 26, 1969, Ser. No. 864,266

Int. Cl. E05c *19/14*

U.S. Cl. 292—128 13 Claims



A handle having opposed abutments between which an elongated handle base is received and held against relative lateral and longitudinal displacement. The base, in turn, is adapted to receive a cartridge, incorporating a latch mechanism and holddown device, in either of two indexed positions whereby the possible combination of relative positions of the handle, base and latch cartridge can accommodate left- or right-hand, inside or outside sliding doors. Alternatively, the base mounts a latch actuating lever while the latch cartridge is mounted in the door stile within a mortised mount that receives a latch keeper secured to the door jamb to provide a double holddown, first, between the cartridge and the keeper and, second, between the mortised mount and the keeper.

3,596,955

AUTOMOBILE DOOR CLOSURE OPERATING ASSEMBLY

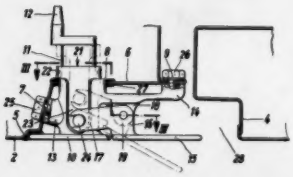
Hans Colell, Schwieberdingen, Germany, assignor to Firma Dr. Ing.h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed Apr. 4, 1969, Ser. No. 813,627

Claims priority, application Germany, Apr. 4, 1968, P 31 217/63c

Int. Cl. E05c *1/14*; E05b *3/00*

U.S. Cl. 292—165 5 Claims



A door closure operating assembly, particularly for a door of an automotive vehicle body, including a fastening element with a locking member and a handle pivotable about an axis extending in a substantially vertical direction operatively engaging with the fastening element, wherein a depression is formed in a door panel in the region of attachment of the handle such that the handle lies flush with the major portion of the door panel when the handle is in a closed position.

3,596,956

DOOR LOCKING DEVICE

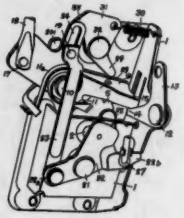
Kohichi Yoshie, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi, Japan

Filed Aug. 27, 1969, Ser. No. 853,427

Claims priority, application Japan, Aug. 31, 1968, 43/62591

Int. Cl. E05c *3/26*

U.S. Cl. 292—216 4 Claims



A door locking device wherein a rotary member in which a latch and step are formed is secured to a shaft pivoted rotatably to a baseplate of the door locking device on the side of a door, the force of a spring energized in one direction around the shaft is applied to rotary member, and an engaging lever formed with a step to be engaged with the step of the rotary member is pivoted rotatably to the baseplate, engagement between the two steps being insured by the application of the force of a spring. Separately from the engaging lever, an unlocking lever is pivoted to the baseplate in such a manner that part of the unlocking lever and part of the engaging lever are disposed close to each other. The unlocking lever is provided with an elongated hole while the engaging lever is formed with an abutment at its adjoining edge over a section corresponding to the length of the elongated hole. A lateral pin is provided on a free end of a connecting rod related with one end of a locking lever pivoted to the baseplate, and this lateral pin is fitted into the elongated hole and protruded therefrom so as to contact the abutment of the engaging lever. Further, an automatic unlocking lever applied with resilient force so as to always abut against the engaging lever with one of its ends is pivoted to the baseplate, while the automatic unlocking lever is provided at the other end with a pawl to abut the lateral pin moved to such a position as not to contact the abutment provided on the engaging lever during the locking operation of the locking lever. But when locking operation is performed while the unlocking lever is maintained at an unlocking position at the time of the locking operation of the locking lever, the lateral pin fitted into the elongated hole of the unlocking lever is prevented from abutting against the pawl at the other end of the automatic unlocking lever even when the automatic unlocking lever is revolved.

3,596,957

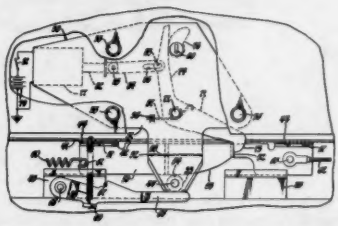
CLOSURE LATCH

Edmond R. Gionet, Warren, and Theodore F. Peters, Utica, both of, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 31, 1969, Ser. No. 846,451

Int. Cl. E05b *63/20*; E05c *19/00*

U.S. Cl. 292—332 10 Claims



A closure latch for a vehicle body deck lid or the like includes a striker mounted to the deck lid for movement with

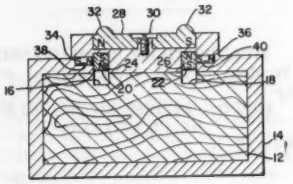
the deck lid and being positioned thereon to be in operative relation to a latch member in the form of a wedge plate slidably mounted on the vehicle body. The wedge plate is reciprocable between an unlatched position, a latched position and a release position with movement from the unlatched position to the latched position and from the latched position to the release position being power assisted so that during final closure, the wedge plate is power driven to effect latching whereby the deck lid is firmly forced into closure contact against the vehicle body with a weather seal therebetween and whereby further power movement of the wedge plate will effect a power-assisted unlatching of the deck lid, a releasable detent mechanism being used to hold the wedge plate in a latched position.

3,596,958

MAGNETIC LOCK

William R. Bowerman, 34 Todd Pond Road, Lincoln, Mass.

Filed Aug. 27, 1969, Ser. No. 853,257
Int. Cl. E05c *3/14, 3/04*; F16d *1/12*
U.S. Cl. 292—201 **7 Claims**



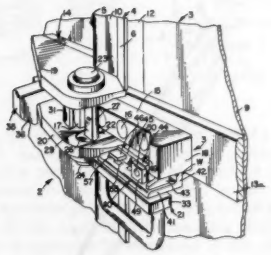
Two relatively movable members are locked in position with respect to one another by means of a pair of movable magnetic locking elements disposed in sockets in one member and adapted to move into cooperating sockets in the other member when aligned therewith. One member is provided with a control magnet in proximity to the sockets and the locking elements and movable with respect thereto. The poles of the locking elements are reversed to one another whereby the control magnet, in one position, will drive the locking elements into a locking position and, in another position, will retract the locking elements. Keeper magnets are provided to hold the locking elements in locked position.

3,596,959

DOOR LOCK MECHANISM FOR SLIDING DOOR MEANS

Ray L. Ferris, Thornton, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 30, 1968, Ser. No. 787,645
Int. Cl. E05c *3/14*
U.S. Cl. 292—205 **9 Claims**



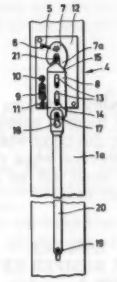
In a sliding door assembly a lock mechanism comprising a horizontally extending elongated locking latch mounted on the sliding door and having a latch head, a pivotal catch including a handle and cam mountable on the doorpost and spaced away therefrom to define a latch-receiving space, the locking operation occurring upon rotation of the handle to the locked position and having the catch cam entrap the latch head between the cam and the doorpost, hook means preventing movement of the catch in the unlocking position, and secondary locking means including complementary registering holes on a secondary lock element on the door and on the handle, further seal holes provided on the secondary lock element and on the handle and a movable locking arm pivotally mounted on said locking element and having a cam registering with an opening in the handle in the locked position of the secondary lock means.

3,596,960

AUXILIARY LOCK FOR DOORS OF MOTOR VEHICLES

Gustav Mayer, and Horst Klebba, both of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed May 15, 1969, Ser. No. 824,901
Claims priority, application Germany, June 6, 1968, P 17 03 532.4
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **5 Claims**



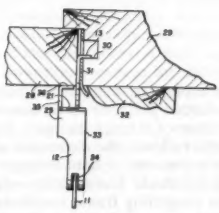
An auxiliary lock for doors of motor vehicles, having a fork member on the impact side of the door which is swiveled by a closing bolt on the doorpost under a spring load. A stop bolt is connected with an operating peg of the main lock, and a spring is provided with the bolt engaging by means of the spring between the prongs of the forked member.

3,596,961

PORTABLE DOOR LOCK

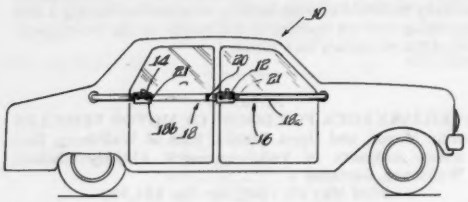
Aaron Harry Lippman, Rochester, N.Y., assignor to Brainerd Manufacturing Co., Inc.

Filed Apr. 7, 1970, Ser. No. 26,235
Int. Cl. E05c *19/18*
U.S. Cl. 292—292 **5 Claims**



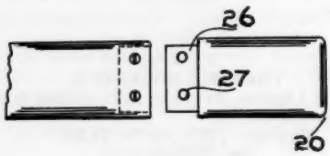
A portable door lock having a toothed latch bar with a hook for engaging the door frame and a blocking member slidable on the latch bar for latching into the teeth to block the door from opening is improved by making the blocking member as a simple, resilient U-shaped band having overlying cross tabs extending across the ends of the U to engage the teeth. Slots are formed in both tabs and in the U-portion for receiving the latch bar, and finger grip regions on each side of the blocker allow it to be squeezed to release the tabs from the teeth.

3,596,962
SIDE BUMPER GUARD FOR AN AUTOMOBILE
Adelbert F. Hertzell, 5024 Lee Street, Skokie, Ill.
Filed Oct. 3, 1969, Ser. No. 863,548
Int. Cl. B60r *19/04*
U.S. Cl. 293—1 **4 Claims**



A bumper guard assembly apparatus to be attached to an automobile comprising a bumper guard and means to move the bumper guard in one direction when the apparatus is in use and in an opposite direction when the apparatus is not in use, whereby the same need not be completely detached from the automobile at any time.

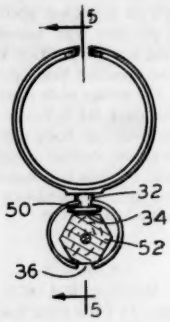
3,596,963
BREAKABLE BUMPER EXTENSION
Francis Lee Phillips, 6909 Sunnydale Way, Valley Station, Ky.
Filed July 22, 1969, Ser. No. 843,718
Int. Cl. B60r *19/04*
U.S. Cl. 293—76 **6 Claims**



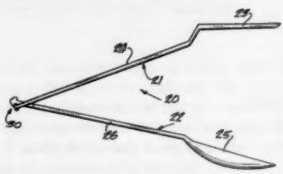
A breakable elongated bumper extension fabricated of a glass-fiber-reinforced polymer to be mounted on the end of the middle portion of a truck bumper. Upon impact with a guard rail or other object, the extension will break off rather than bend. This prevents a bent bumper from locking the front wheel of the truck. The middle section of the bumper, attached to the projecting frame members of the truck, provides protection against head-on impact. The extension prevents rocks and other objects from being thrown forwardly by the truck's front wheel into the windshield of oncoming automobiles.

3,596,964
WRITING IMPLEMENT HOLDER
Joseph R. Zazzara, 302 Albert Road, Syracuse, N.Y.
Filed Dec. 19, 1968, Ser. No. 785,112
Int. Cl. B65g *7/12*
U.S. Cl. 294—25 **1 Claim**

Finger writing implement holder comprising a split resilient finger band having a short stem with a shallow head and an implement-holding split resilient sleeve, having a keyhole-shaped slot extending inwardly from a side edge, the circular aperture of which embraces the stem.

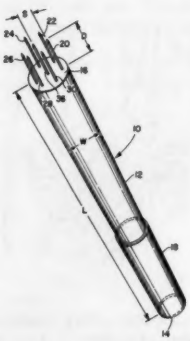


3,596,965
MULTIPURPOSE HAND UTENSIL
Cecil B. Woofter, Newton, Iowa, assignor to The Vernon Company
Filed Oct. 22, 1968, Ser. No. 782,500
Int. Cl. A47j *45/00*
U.S. Cl. 294—28 **1 Claim**



A multipurpose household hand utensil comprising individual, separate complementary members having elongated handles detachably hingedly connected to perform as gripping tongs and separately useable.

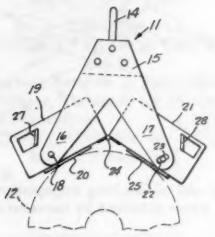
3,596,966
WEEDER
Fred H. Shredl, 7270 Mayberry Drive, Parma, Ohio
Filed Feb. 19, 1969, Ser. No. 800,574
Int. Cl. A01k *81/04*
U.S. Cl. 294—61 **5 Claims**



A device for pulling weeds. The device has a handle with a plurality of prongs projecting from one end of the handle.

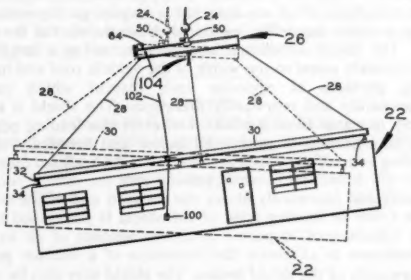
The prongs engage the weed and break up the ground surrounding the weed as the handle is rotated. The weed becomes entangled in the rotating prongs which are withdrawn from the ground to extract the weed.

3,596,967
LIFTING DEVICE
Cecil J. Carter, Hobart, Ind., assignor to United States Steel Corporation
Filed Jan. 31, 1969, Ser. No. 795,564
Int. Cl. B66c 1/04; B21b 31/06
U.S. Cl. 294—65.5 1 Claim



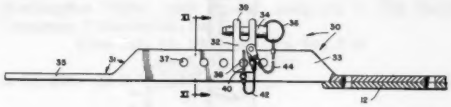
A magnetic lifting device for rolls of strip steel, or the like. The device consists of a frame having a pair of electromagnets pivoted thereto. The electromagnets are hingedly connected at their inner ends so that they can assume a configuration in accordance with the contour of a steel roll or other object of magnetic material being lifted. Thus, the electromagnets can engage either the arcuate periphery of a roll of strip steel, or the flat end of the roll.

3,596,968
LIFTING APPARATUS
John J. Holm, Hollywood, Fla., assignor to Behring Corporation, Ft. Lauderdale, Fla.
Filed Jan. 9, 1970, Ser. No. 1,779
Int. Cl. B66c 1/00
U.S. Cl. 294—67 AA 10 Claims



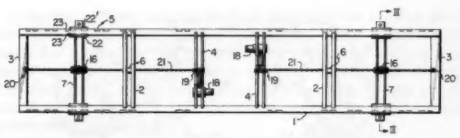
Lifting apparatus for lifting and controlling a three-dimensional load, particularly a module for a modular building. The apparatus includes a lifter mounted on a movable support connected to a frame. The lifter is adapted to be lifted by a crane or other power means. The frame is adapted to be connected to the load as with securing lines. A first drive mechanism is operatively connected to the lifter for moving it relative to the support in first and second opposite directions, and a second drive mechanism is operatively connected to the support for moving the support and the lifter thereon in opposite directions perpendicular to the first and second directions. The drive mechanisms include electrical motors which are controlled by control apparatus operable to actuate the motors to position the lifter at any point in a plane in order to control the angle of the load while lifted.

3,596,969
WEAPON-HANDLING SKID
Leonard La Rosa, Jr., Ridgecrest, Calif., assignor to the United States of America as represented by the Secretary of the Navy.
Filed Mar. 20, 1969, Ser. No. 808,842
Int. Cl. B66c 1/10
U.S. Cl. 294—67 DB 5 Claims



A method and apparatus is provided for the loading of heavy ordnance onto the bomb racks of aircraft. The invention involves the modification of existing bomb carts or skids by the addition of hoisting adapters so that the bomb and skid may be raised together for placement of the bomb and then the skid lowered to the ground or deck. The adapters are adjustably mounted so that the bomb hoist hoisting cables may be attached to the assemblage at or near the center of gravity.

3,596,970
MECHANICAL GRIPPER FRAME UNIT LIFTING DEVICES FOR PARALLEL-WALLED CONTAINERS OR THE LIKE
Robert Levert; Roger Poupon, and Robert Rousse, all of Paris, France, assignors to Matisa Material Industrial S.A., Crissier, Switzerland
Filed Apr. 14, 1969, Ser. No. 815,851
Int. Cl. B66c 1/00
U.S. Cl. 294—67 DA 3 Claims

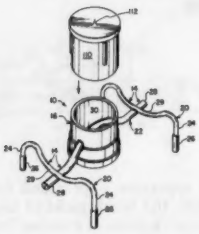


A mechanical gripper frame unit for devices utilized for lifting parallel-walled containers or the like is disclosed. The novel frame unit or apparatus includes two pairs of rotary locking means disposed thereon for gripping the containers at the upper corners thereof. The longitudinal displacement of the pairs of rotary locking means so as to account for different lengths of containers to be lifted is adjustable by displacing each of the rotary locking mean pairs upon a support frame. When the pairs of rotary locking means have reached their desired spaced-apart distance, the rotary locking mechanism thereof is automatically controlled so as to grip the upper corners of the containers. A particularly novel feature of the instant invention concerns the fact that a common drive element serves for both longitudinally displacing the rotary locking mean pairs and for subsequently and automatically causing rotation of the locking mean pairs at their proper location to effect gripping of the container. In this manner, simplication of the lifting apparatus is obtained as is increased efficiency and safety in the handling of the containers to be lifted.

3,596,971
ANCHOR INSERT AND PICKUP UNIT ASSEMBLY FOR A CONCRETE SLAB
Peter D. Courtois, Des Plaines, and George J. Eriksson, Morton Grove, both of, Ill., assignors to Superior Concrete Accessories, Inc., Franklin Park, Ill.
Filed Jan. 17, 1969, Ser. No. 792,115
Int. Cl. B66c 1/00
U.S. Cl. 294—89 5 Claims

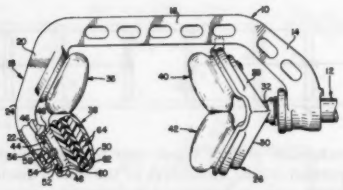
An anchor insert adapted to be positioned on the foundation surface of a concrete slab form so that when concrete is

poured into the form the insert becomes embedded therein, and a separate pickup unit including a torque stem which, when introduced through a hole in the concrete leading to



the embedded insert and then twisted through an angle of 60°, becomes interlocked with the insert. A bail on the pickup unit enables the latter to be connected to an overhead hoisting mechanism.

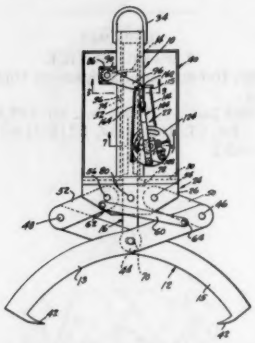
3,596,972
TREE CLAMP STRUCTURE
Stuart D. Pool, Wheaton, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Sept. 2, 1969, Ser. No. 854,499
Int. Cl. B25b *5/02*
U.S. Cl. 294—103 **13 Claims**



A tree clamp structure mounted on a boom adapted to be reciprocated to dislodge fruit from a tree. The clamp structure includes fixed and movable jaws having flexible tree-engaging pods thereon. Each pod includes a flexible cap mounted on a jaw to define an airtight chamber containing silicone putty, tire carcass discs, and air to provide a tree-gripping structure for reciprocating a tree without relative movement therebetween.

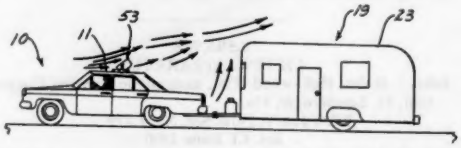
3,596,973
AUTOMATIC GRAPPLE DEVICE
Adolph Anderson, 238 39th Ave. S., West Richland, and Donald R. Hodgin, 1316 Birch Ave., Richland, both of, Wash.
Filed Aug. 15, 1969, Ser. No. 850,410
Int. Cl. B25b *5/08*
U.S. Cl. 294—110 **12 Claims**

An automatic grapple for universal application including a support member having a loop for attachment to a hoist, a pair of crossed, barbed tongs pivoted to one another at their crossing point, links connecting one end of each of said tongs to said support member, a ram pivotally connected at one end to the pivot of said tongs, means on said support member defining a path for movement of said ram during closing and opening of said tongs, a trigger extending into said path to be struck by said ram, cooperating latching elements carried by said ram and support member for holding said tongs open, and link mechanism connecting said trigger to one of said latching elements and operative to move said one latching



element into and out of latching engagement with the other latching element when actuated by movement of the trigger.

3,596,974
AIR CURRENT DEFLECTING DEVICE
John Q. Adams, Clark, Mo.
Filed Mar. 10, 1969, Ser. No. 805,709
Int. Cl. B62d *37/02*
U.S. Cl. 296—1 S **6 Claims**

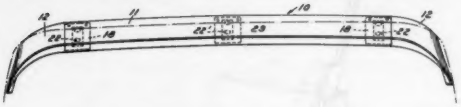


An air current deflecting device for use with a vehicle pulling a trailer or the like. An elongated transparent deflecting shield is pivotally secured to a pair of spaced-apart support members which are detachably secured to the vehicle so as to position the deflecting shield above the roof of the vehicle. The shield includes a face portion having a length approximately equal to the width of the vehicle roof and having wing portions at opposite ends thereof which extend downwardly and rearwardly therefrom. The shield is selectively movable from a position wherein the leading edge of the face portion is positioned below and forwardly of the trailing edge of the face portion so that the inclined face portion will deflect air currents passing over the vehicle roof upwardly and rearwardly above the forward end of the trailer. The lower or leading edge of the shield is positioned above the vehicle roof to permit a certain amount of air to pass therebelow to eliminate the formation of a vacuum pocket rearwardly of the shield means. The shield may also be selectively pivoted to an inoperative position wherein the face portion of the shield is substantially parallel to the roof of the vehicle.

3,596,975
WIND DEFLECTOR FOR AUTOMOBILES
James Stephen, Royal Oak, Mich., assignor to Helm Design & Manufacturing, Inc., Detroit, Mich.
Filed Apr. 23, 1969, Ser. No. 818,581
Int. Cl. B60j *1/20*
U.S. Cl. 296—1 S **16 Claims**

A wind deflector for automobiles comprising a central sheet metal portion having horizontally inwardly extending flanges along the top and bottom edges thereof and die cast end portions telescoped within said flanges. Brackets are fixed to said telescoped portions of said die cast element and

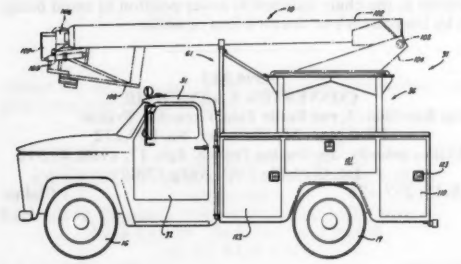
are fastened to the automobile top. An additional bracket is fixed to a member telescoped within said central body portion intermediate the ends thereof and is also fixed to the automobile top.



3,596,976
VEHICLE CONSTRUCTION FOR USE WITH AERIAL LIFT

Jay M. Eitel, Atherton; Bertram J. Leigh, Redwood City, and Ferdinand A. Migeot, Oakland, all of, Calif., assignors to General Cable Corporation

Filed May 9, 1969, Ser. No. 823,422
Int. Cl. B66c *23/78*
U.S. Cl. 296—24 R **13 Claims**

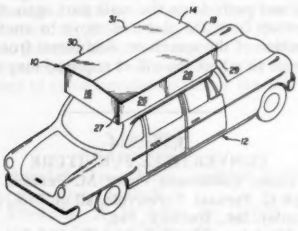


Vehicle construction for use with an aerial lift having a wheeled chassis with a pair of generally parallel, longitudinally extending frame members. A unitary frame assembly is removably mounted on the frame members and is constructed in such a manner that it can be mounted on chassis of different types. The unitary frame assembly includes support pads adapted to be mounted on the frame members, vertical members extending upwardly from the support pads and a mounting ring disposed in a generally horizontal plane mounted on the vertical members. The mounting ring is adapted to have the aerial lift mounted thereon.

3,596,977
FOLDABLE CAR TOP SHELTER

Howard P. Bunger, 6900 West 38th Ave., Wheatridge, Colo.

Filed Aug. 13, 1969, Ser. No. 849,726
Int. Cl. B60p *3/34*
U.S. Cl. 296—27 **10 Claims**

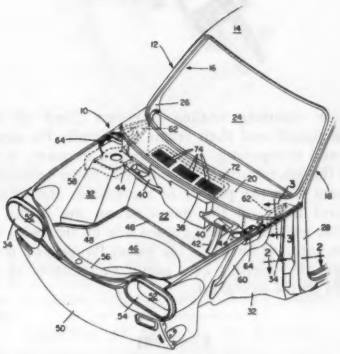


A foldable car top shelter, having a top and bottom, with a pair of hinged side members on each side carrying rollup curtains pivot outwardly providing side shelter curtains, and a pullout top cover for each side, weather seals with the pivoted sides providing an end curtain for each side shelter for the vehicle. Space in the unit holds bunks, bedding or the like.

3,596,978
COMBINED A-POST, COWL AND WHEELHOUSE STRUCTURE

Henry W. Wessells, III, Paoli, and Walter S. Eggert, Jr., Huntingdon Valley, both of, Pa., assignors to The Budd Company, Philadelphia, Pa.

Filed July 16, 1969, Ser. No. 842,314
Int. Cl. B62d *21/00*
U.S. Cl. 296—28 R **3 Claims**

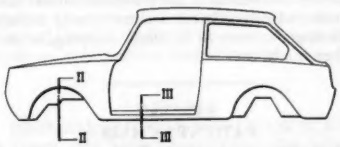


A motor vehicle structure which provides for a more shallow A-post structure and a reinforced inner wheelhouse panel for joining to the A-post and transferring loading and shock stresses from the wheels or front end to the A-post. The dash panel, cowl, inner wheel housing and A-post structure forming an open box structure across the front of the passenger compartment.

3,596,979
PLASTIC AUTOMOBILE BODY

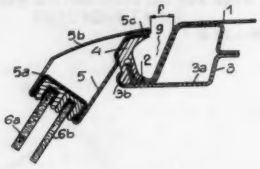
Hermann Hablitzel, Wolfsburg; Ernst Gallasch, Wolfsburg; Friedrich Jacob, Steimke Ub. Wittingen, and Alfred Patzold, Wolfsburg, all of, Germany, assignors to Messrs. Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Dec. 6, 1968, Ser. No. 781,889
Claims priority, application Germany, Dec. 7, 1967, P 16 55 650.6
Int. Cl. B62d *29/04*
U.S. Cl. 296—31 P **5 Claims**



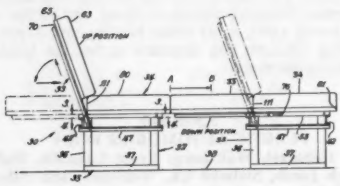
An automobile body of synthetic plastic materials of substantially two parts as two large components. The parts are produced by injection moulding and there are flat contacting surfaces for the contacting parts of the body.

3,596,980
DEVICE FOR EFFECTING A SEAL
Jean G. Cadiou, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Nov. 22, 1968, Ser. No. 778,129
Claims priority, application France, Nov. 23, 1967, P.V.129,424
Int. Cl. B60j *7/18*
U.S. Cl. 296—154 **17 Claims**



A device ensuring sealing between fixed or movable removable panels and their frame, especially for automobile vehicles, and comprising: a fixed frame element, a movable panel the flanges of which are faired so as to be substantially in alignment with the profile of the frame, and at least one sealing joint fixed on the panel or on the frame in such manner that when the panel comes side by side with its frame there is an interval between the panel flange and the frame, determining the opening of a gutter the bottom of which is constituted by the said joint.

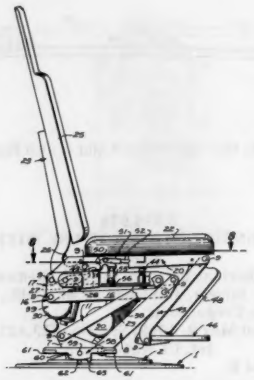
3,596,981
SEAT-BED
Henry J. Koziol, 110 No Yana Drive, Willow Springs, Ill.
Filed June 23, 1969, Ser. No. 835,500
Int. Cl. A47c *4/00, 3/00, 17/04*
U.S. Cl. 297—64 **5 Claims**



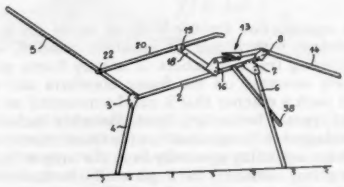
A convertible seat-bed particularly well suited for vans, sport vans, campers, remodeled buses, etc., having distinct base, horizontal bench-type seat, and back, the horizontal seat being slideable horizontally, front and back on the base, the back including arms which fit under the seat when the back is placed horizontally on the base. A plurality of the seat beds of this invention, placed in appropriate juxtaposition, provides at least six and up to 12 or more relatively easily achieved combinations for maximum utilization of the seats. A preferred embodiment is conveniently collapsible to provide minimum volume to facilitate shipping, or storage of the unit when not in use.

3,596,982
PATIENT'S CHAIR
Guenter A. Grams, Costa Mesa, Calif., assignor to Surgical Mechanical Research, Inc., Newport Beach, Calif.
Filed May 15, 1969, Ser. No. 824,819
Int. Cl. A47c *1/04*
U.S. Cl. 297—71 **13 Claims**

A chair intended for doctor's patients which is provided with a first electric motor and screw drive power unit, a linkage assembly for raising and lowering the chair, and a second electric motor and screw drive power unit including a linkage and cam assembly for tilting and horizontally extending the chair; an auxiliary linkage is provided which retracts a footrest as the chair assumes its lower position to avoid being hit by the patient's or doctor's foot or ankle.



3,596,983
CONVERTIBLE ARMCHAIR
Rene Ramillon, 3, rue Emile Zola, Grenoble, France
Filed Mar. 21, 1969, Ser. No. 809,172
Claims priority, application France, Apr. 17, 1968, 49,910
Int. Cl. A47c *1/02;* **A61g** *15/00*
U.S. Cl. 297—78 **7 Claims**

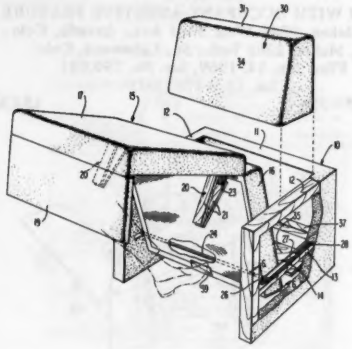


A convertible armchair has a framed seat to which the front and back legs, back and footrest are hinged, as well as rods which form a deformable parallelogram with them. An adjustable length telescopic rod is connected to the parallelogram and seat frame to form a second parallelogram with a common side with the first, through hinged gussets and a yoke. The telescopic rod has a cylindrical stop fixed on its male part so as to be guided and received in slots in the female part to set various positions of the back relative to the footrest. A handle is hinged on the female part and has a roller on its lower face arranged to act through a slot in the female part and push down the male part against a spring to release the stop from the slot and move to another slot for another position of the armchair. Additional front legs and a friction system to adjust the effort required may also be provided.

3,596,984
CONVERTIBLE FURNITURE
Melvin R. Jones, Baltimore; Victor M. Peruzzi, Forestville, and Joseph G. Peruzzi, Forestville, all of, Md., assignors to Victor Stanley, Inc., Dunkirk, Md.
Filed Apr. 22, 1969, Ser. No. 818,266
Int. Cl. A47c *13/00*
U.S. Cl. 297—105 **3 Claims**

A convertible seat and bed structure which features simplicity of construction in the absence of complex and costly linkages, ease of operation, and a range of adjustments to

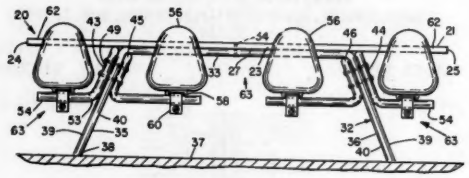
various use positions. The arrangement is such that upholstered surfaces utilized for seating are different from surfaces utilized for sleeping, and therefore, double-duty surfaces are eliminated and wear is reduced.



3,596,985
COMBINED TABLE AND CANTILEVERED SEAT ASSEMBLY

Raymond G. Degagne, 37 River St., Graniteville, Mass.

Filed Apr. 29, 1969, Ser. No. 820,263
Int. Cl. A41b *41/00*
U.S. Cl. 297—157 **8 Claims**



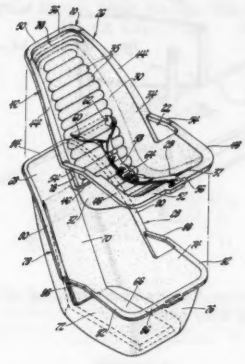
A preferably polygonal table is supported by longitudinally extending inverted U-shaped legs, the legs being connected into a rigid frame by laterally extending seat support members, each member having a free terminal end extending horizontally outwardly from intermediate of the height of an inclined leg to provide cantilever support for a seat. At least one seat is thus supported from each leg, with each leg sufficiently inclined to avoid unbalanced tilt of the assembly.

3,596,986
BABY SEAT

La Verne B. Ragsdale, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1970, Ser. No. 23,919
Int. Cl. A47d *1/10*
U.S. Cl. 297—183 **3 Claims**

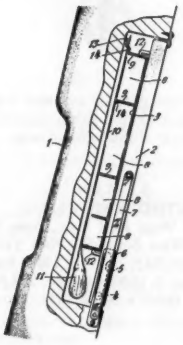
A baby seat including an outer shell member and an inner shell member formed of a plastic material and fastened together so as to make a rigid unitary member. The baby seat is portable and is adapted to be used in a vehicle, in which case it rests on the passenger seat with the baby facing rearwardly. Suitable openings are provided in the baby seat for permitting the vehicle seatbelt to serve as a means for holding the baby seat in place.



3,596,987
PACKAGING AND SERVING OF FOOD

Anthony A. R. Wilson, Castries, St. Lucia, United Kingdom, assignor to Autair International Airways Limited, London, England

Filed Mar. 27, 1969, Ser. No. 811,126
Claims priority, application Great Britain, Apr. 8, 1968, 16,822/68
Int. Cl. A47c *7/62*
U.S. Cl. 297—191 **10 Claims**



The invention described relates to means whereby prepared meals are made available in hygienic manner in vehicles such as aircraft in which weight, space and personal service are matters of economy. It resides basically in providing storage in the back of a seat accessibly to the next passenger behind, and is therefore concerned with vehicles in which seats are arranged one behind another.

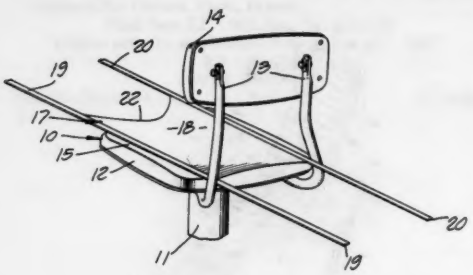
3,596,988
DISPOSABLE COVER FOR CHAIR SEAT

James J. Cowen, 544 North Mission Drive, San Gabriel, Calif.

Filed June 18, 1970, Ser. No. 47,458
Int. Cl. A47c *31/10*
U.S. Cl. 297—219 **2 Claims**

A disposable cover for a chair seat is formed of nonwoven fabric material. A central body portion thereof is formed of a single sheet and provided with marginal edges secured to tie strings extending beyond the body portion in both directions. The body portion has a generally V-shaped symmetrical

notch in a forward edge between the marginal tie strings, the notch being constructed to lie adjacent the convex forward

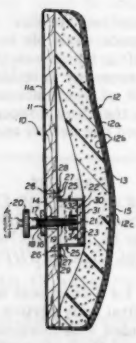


edge of the chair seat to prevent wrinkling of the cover on the surface of the chair seat.

3,596,989
SEAT UNIT
Arthur L. Van Ryn, and Ernest R. Balys, both of Grand Rapids, Mich., assignors to American Seating Company, Grand Rapids, Mich.
Filed May 14, 1969, Ser. No. 824,403
Int. Cl. A47c *31/10*
U.S. Cl. 297—219 **2 Claims**

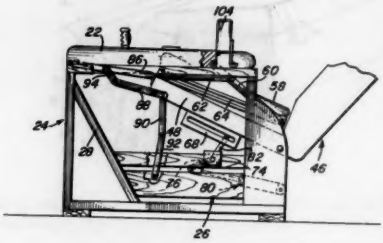
A seat unit for a folding chair wherein the panlike seat is equipped with a foam pad and fabric seat cover removably secured to the underside of the panlike seat.

3,596,990
ORTHOPEDIC CHAIR
Louis Gottfried, 515 West End Ave., New York, N.Y., and Jacob Berger, 600 West 246th St., New York, N.Y.
Division of Ser. No. 609,942, Jan. 17, 1967, Pat. No. 3,464,754.
Filed Jan. 2, 1969, Ser. No. 788,547
Int. Cl. A47c *3/00*
U.S. Cl. 297—284 **6 Claims**



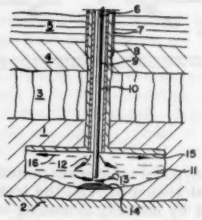
The orthopedic chair has a seat including a positioning member and an elastomer layer disposed between a bottom rigid member and a top layer. A vertically movable bolt means is disposed through an opening in the bottom rigid member for moving a positioning member upwardly thereby causing the elastomer layer to be moved upwardly and producing a curvature in the seat.

3,596,991
CHAIR WITH OCCUPANT-ASSISTING FEATURE
Oliver F. Mckee, 9840 West 53rd Ave., Arvada, Colo., and Wayne F. Mckee, 2201 Teller St., Lakewood, Colo.
Filed Jan. 14, 1969, Ser. No. 790,981
Int. Cl. A47c *1/031*
U.S. Cl. 297—326 **15 Claims**



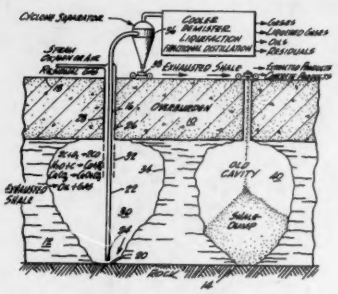
An armchair including hydraulically controlled seat and arms whereby a forward and upward pivoting of the arms and seat can be effected so as to raise an occupant from the chair. Alternatively, the seat, in conjunction with a supporting base therefor and the back of the chair, can pivot rearwardly so as to assume a partially reclining position with a footrest, through an appropriate linkage, extending to assume a leg-supporting position.

3,596,992
METHOD FOR RECOVERING SALT FROM A SUBSURFACE EARTH FORMATION
Daniel N. Dietz, Volmerlaan, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Filed Jan. 14, 1970, Ser. No. 2,765
Claims priority, application Great Britain, July 2, 1969, 33351
Int. Cl. E21b *43/281*
U.S. Cl. 299—5 **11 Claims**



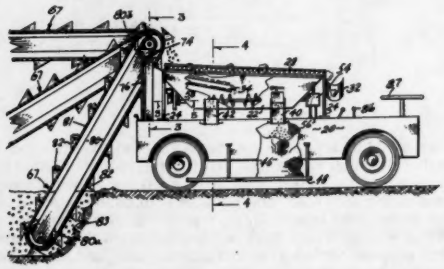
A method for the recovery of salt from a subsurface earth formation containing salt therein by injecting an aqueous liquid followed by an injection of a blanket liquid into a cavity formed in the formation with salt water produced therefrom. The cavity is formed within layers present in the formation which lie below layers containing salt suitable to increase the density of solution present in the cavity and is expanded upwards into these layers. The volume of liquid injected into the cavity and the volume of liquid produced therefrom is measured per unit of time and the difference between these two volumes is determined, the injection rate of the blanket liquid being selectively increased when the difference between the two volumes exceed a predetermined value and reduced when the difference between the two volumes falls below the predetermined value.

3,596,993
METHOD OF EXTRACTING OIL AND BY-PRODUCTS FROM OIL SHALE
Harold M. Busey, Kennewick, Wash., assignor to McDonnell Douglas Corporation
Filed Feb. 14, 1969, Ser. No. 799,227
Int. Cl. E21b 43/24
U.S. Cl. 299—5 4 Claims



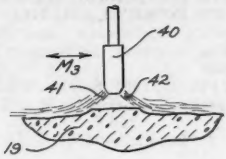
Oil and by-products are extracted from oil shale by drilling a hole into the shale bed and heating the shale in its bed. Steam and oxygen or air mixtures provide self-sustaining heating that draws oil from the shale in the form of vapor and mist. As the oil is removed, the heat and subsequent water gas reaction changes the hard shale into a whitish, weak structured, friable material. This material falls, of its own weight, to the bottom of the hole, thus exposing new shale for processing. Action of steam with residual carbon in the shale generates hydrogen nd adds to the gas flow that carries the oil vapor and mist to the surface, together with the friable material in the form of ash particles. The oil, and any other valuable materials, are separated from the ash before it is either converted to a building block material or dumped into a used shale bed cavity.

3,596,994
MULTIPLE TRENCH DIGGER AND SOIL BAGGER
Kenneth S. Garden, 130 West Owens Ave., Las Vegas, Nev.
Filed Dec. 3, 1968, Ser. No. 780,714
Int. Cl. E02f 5/06, 5/10
U.S. Cl. 299—7 4 Claims



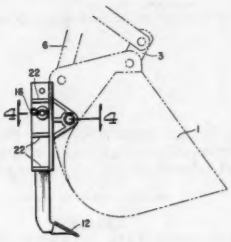
An automotive vehicle carrying multiple juxtaposed trench diggers depending rearwardly therefrom for digging a deep trench behind said vehicle as the latter travels, said trench diggers discharging soil excavated from said trench upwardly over and onto a screen-covered power-vibrated hopper carried on said vehicle, from which hopper screened soil freely flows through multiple gate controlled bag filling chutes which are attended by a crew of men walking alongside the vehicle.

3,596,995
CHANNELING APPARATUS AND METHOD
Ernest Marshall Fitzgerald, Norwich, Vt., assignor to Browning Engineering Corporation
Filed May 3, 1968, Ser. No. 726,496
Int. Cl. E21c 37/06
U.S. Cl. 299—14 2 Claims



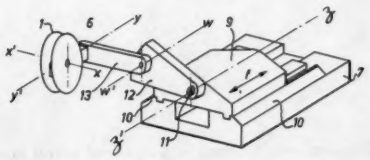
A jet flame rocket burner for working rock and other spallable mineral material. Channels are formed in rock masses by opposing jets moved over the surface of the rock.

3,596,996
METHOD AND APPARATUS FOR USING A BACK HOE BUCKET AS A FROZEN GROUND RIPPER
Jack D. Carter, 609 Curdes Ave., Fort Wayne, Ind.
Filed May 16, 1969, Ser. No. 825,162
Int. Cl. E02f 3/76
U.S. Cl. 299—10 8 Claims



A two-piece multiposition ripper attachment for a back hoe is disclosed. In a first position, the attachment is stored out of the way so as to not interfere with normal use of the back hoe. In a second position, the attachment and method is exposed so that the back hoe may be used as a ripper in one orientation and may be used to perform its normal functions in a second orientation.

3,596,997
MACHINE FOR EXCAVATING GALLERIES
Alfred Valantin, Clermont, France, assignor to Charbonnages De France, Paris, France
Filed May 13, 1969, Ser. No. 824,140
Claims priority, application France, May 17, 1968, 152,304
Int. Cl. E21c 25/62
U.S. Cl. 299—72 5 Claims



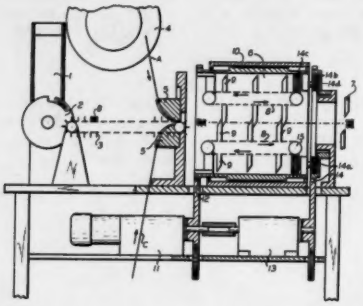
A machine for excavating galleries or levels in mines by means of a cutting head which is arranged in such manner that it cuts out, in the wall to be mined, grooves in which the outlines on a vertical plane are parallel in pairs but always perpendicular to the flat wall and cut this latter along successive flat vertical surfaces.

The cutting head is consequently formed by two parallel discs provided with picks driven in rotation by a shaft at right angles to the axis of the gallery and carried by a disc-carrier head which is orientable with respect to a longitudinal axis parallel to the axis of the gallery.

3,596,998
APPARATUS FOR CONTINUOUS MANUFACTURE OF CYLINDRICAL BRUSHES

Alfred Romanowski, Kleineichen, and Richard Weiss, Troidorf, both of, Germany, assignors to Dynamit Nobel Aktiengesellschaft

Filed Feb. 27, 1969, Ser. No. 802,826
Claims priority, application Germany, Mar. 2, 1968, P 16 32 368.5
Int. Cl. A46d 9/00
U.S. Cl. 300—2 **5 Claims**

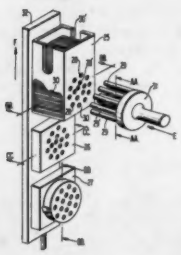


Cylindrical bushes manufactured by the direct twisting of two wires, tensioned parallel to one another, between which bristles are introduced during the twisting operation.

3,596,999
NOVEL BRUSH MACHINERY AND BRUSH CONSTRUCTIONS

John C. Lewis, Jr., Middlebury, Vt., assignor to Tucel Industries, Inc., Middlebury, Vt.

Division of Ser. No. 578,840, Sept. 12, 1966, Pat. No. 3,471,202.
Filed Oct. 25, 1968, Ser. No. 841,160
Int. Cl. A46d 1/08
U.S. Cl. 300—21 **5 Claims**

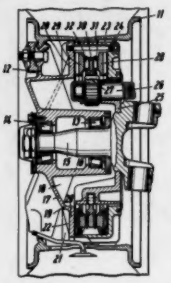


This invention consisting of a new and useful method for making brush and brush-related articles, allows tufted brush components to be manufactured having pretrimmed synthetic filament tufts. The method consists in picking precut filament from its trim end and simultaneously trimming and forming the tuft. This method also allows for complete brush constructions to be manufactured in the same instant of time required for inserting single tufts into similar constructions.

3,597,000
WHEEL WITH DISC BRAKE

Hermann Klaue, Av. des Planches 3, Montreux, Switzerland; Karlheinz Kalberlah, Av. des Brayers 1, Clarens, Switzerland; Alfred Cormann, Oststr. 4, Remschield, Germany, and Werner Guntsche, Geschw. Scholistr. 32, Remschield, Germany

Filed May 2, 1969, Ser. No. 821,265
Claims priority, application Germany, Oct. 15, 1968, P 18 03 076.7
Int. Cl. B60b 1/06
U.S. Cl. 301—6 E **10 Claims**

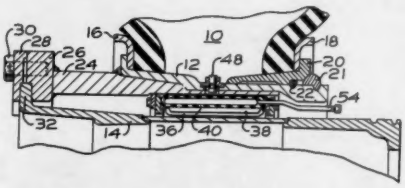


A wheel with disc brake in which the housing of the disc brake is located in an annular space defined to one side of the spokes between the rim and the hub of the wheel and in which the brake housing is so connected to the hub that elastic deformations imparted to the spokes are not transmitted to the brake housing and heat developed in the brake is not directly transmitted to the wheel rim.

3,597,001
TIRE RIM ADAPTER

Raymond S. Morford, and Byrl A. Jedlicka, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

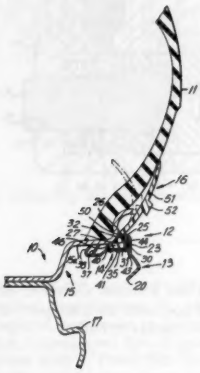
Filed July 8, 1969, Ser. No. 839,845
Int. Cl. B60b 23/00
U.S. Cl. 301—11 **8 Claims**



An adapter device to connect a tire rim to a tire rim of smaller diameter so that the first tire rim and an inflated tire thereon may be used for test driving a piece of heavy equipment before it is sold. The purpose is to enable a set of test tires to be used repeatedly so that the machine can be sold with new tires which have not been marred during testing. The adapter includes an inflatable tube and drive lugs disposed between the tire rim on the machine and the rim of the test tire.

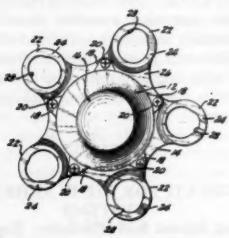
Manufacturers of large earthmoving machinery generally operate machines on a test track prior to delivery to a dealer. If during this final check, the tires are marred or even badly soiled, the dealer or eventual customer may demand a discount. Since large tires often cost thousands of dollars each, this becomes very costly to the manufacturer. Using the same tire repeatedly for test purposes and changing to new tires when the machine is delivered is one solution, but this too creates expense in the form of labor involved in mounting two sets of tires rather than one.

3,597,002
TIRE WHEEL TRIM STRUCTURE
Herbert Buerger, Walton, N.Y., assignor to Del Krome Corp., Walton, N.Y.
Filed Apr. 28, 1969, Ser. No. 819,853
Int. Cl. B60b 7/04; B60c 13/00
U.S. Cl. 301—37 5 Claims



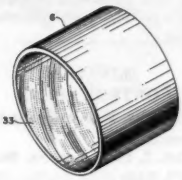
A spring ring is attached to a tire-carrying wheel cover or other annular wheel trim overlying the wheel, and is provided with spring fingers to grip the rim of the wheel. A white wall tire-simulating member is assembled with the ring and cover trim. This member has a portion overlying a portion of the tire, and also has a thickened annular inner edge or bead which fits into an annular channel provided by the ring and trim or cover. This thickened bead and the channel are so shaped that the bead is easily inserted into the channel and has a outwardly facing annular shoulder surface engaging an annular inwardly facing shoulder of the channel, whereby an outward radial pull on said member will cause the shoulder on the channel to hold said member in place against being pulled out. Said inner bead of said member is of triangular shape in radial cross section so that it enters the channel easily and without necessity for squeezing or forcing it into the channel.

3,597,003
SPINNER HUB CAP
Alex Kraus, 1650 West Rosecrans Ave., Gardena, Calif.
Filed May 1, 1969, Ser. No. 820,860
Int. Cl. B60b 7/04
U.S. Cl. 301—108 S 4 Claims



A spinner hub cap having a substantially frustoconical hollow cover member adapted to receive the hub of an automobile wheel, the screws extending through apertured ears on the cover for fastening a flange to the base of the cover wherein the flange includes a plurality of equally angularly spaced lug bolt receiving apertures, the apertures being defined by two contiguous overlapping circles, each of a different diameter and having a different center located on the same radian extending from an axis of rotation of the spinner hub cap.

3,597,004
CONDUITS FOR PLASTICS CONVEYING SYSTEMS HAVING PATTERNED INDENTATIONS IN THE INTERNAL SURFACE OF THE CONDUITS
Garland B. Keith, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 21, 1968, Ser. No. 730,799
Int. Cl. B65g 53/34
U.S. Cl. 302—64 5 Claims



A device for production of patterned indentations in the internal surface of conduits employed in plastics conveying rollers and with a toothed indenting roller. The device is adapted to fit closely within a pipe, tube, fitting, conduit or the like and to be rotatably driven in such a manner as to produce indentations on its inner surface. The indenting effect is accomplished by means of the toothed roller being pressured into contact with the inner surface. The invention also includes the product thus produced. Such product is characterized by its ability to convey particulate or pelleted plastic material in a pneumatic or other conveying system with little or no tendency to become obstructed by the abrasive removal of portions of plastic material which may have become deposited on its internal surface as the pelleted plastic material passed therethrough.

3,597,005
SULFUR-HYDROCARBON SLURRY PIPELINE TRANSPORTATION CONTAINING AN ASPHALTENIC MATERIAL
Mary Frances Vondrak, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Oct. 30, 1968, Ser. No. 772,008
Int. Cl. B65g 53/04
U.S. Cl. 302—66 6 Claims

An improved method of transporting sulfur-liquid hydrocarbon slurries through pipelines without causing plugging or corrosion of the pipelines.

The invention relates to an improved and novel process of preventing plugging and corrosion of pipelines transporting sulfur in the form of a sulfur-liquid hydrocarbon slurry by addition thereto of a small amount of an aqueous solution and an asphaltenic material.

3,597,006
SULFUR-HYDROCARBON SUPPLY PIPELINE TRANSPORTATION CONTAINING AQUEOUS SOLUTIONS OF AN ORGANIC SULFONATE
Mary Frances Vondrak, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Oct. 30, 1968, Ser. No. 772,009
Int. Cl. B65g 53/04
U.S. Cl. 302—66 6 Claims

An improved method of transporting sulfur-liquid hydrocarbon slurries through pipelines without causing plugging or corrosion of the pipelines by addition thereto of a small amount of an organic sulfonate.

3,597,007

SULFUR-HYDROCARBON SLURRY PIPELINE TRANSPORTATION CONTAINING ORGANIC INHIBITORS

Mary Frances Vondrak, Houston, Tex., assignor to Shell Oil Comapny, New York, N.Y.

Filed Oct. 30, 1968, Ser. No. 772,010
Int. Cl. B65g *53/04*
U.S. Cl. 302—66 **10 Claims**

An improved method of transporting sulfur-liquid hydrocarbon slurries through pipelines without causing plugging or corrosion of the pipelines.

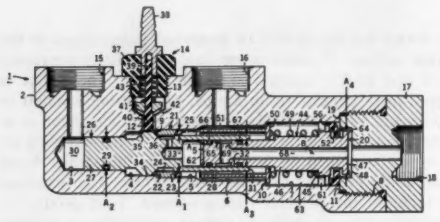
The invention relates to an improved and novel process of preventing plugging and corrosion of pipelines transporting sulfur in the form of a sulfur-liquid hydrocarbon slurry.

3,597,008

CONTROL VALVE

Edward J. Falk, St. Louis, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Oct. 2, 1969, Ser. No. 863,139
Int. Cl. B60t *8/26, 11/34, 17/22*
U.S. Cl. 303—6 C **15 Claims**



A control valve for use in a dual or split brake system having a switch-operating piston movable from a centered position toward opposed translated positions in response to a predetermined differential between separately supplied pressures acting thereon, and a metering piston movable to effect a metered application through said control valve of one of the supplied fluid pressures. The switch-operating piston and metering piston define a bypass passage subjected to the applied fluid pressure and isolated from the one supplied fluid pressure when the switch-operating piston is in its centered position, said bypass passage being subjected to the one supplied fluid pressure upon the movement of the switch-operating piston to one of its translated positions in order to obviate the metering actuation of the metering piston.

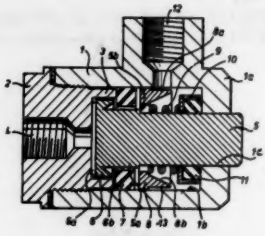
3,597,009

PRESSURE REDUCER DEVICES

Philip Sidney Baldwin, Florence, Italy, assignor to Fiat Societa per Azioni, Turin, Italy and A.G. Racepit, Lucerne, Switzerland, part interest to each

Filed July 9, 1969, Ser. No. 840,348
Claims priority, application Italy, July 11, 1968, 52398A-68
Int. Cl. F16k *17/26*
U.S. Cl. 303—6 C **5 Claims**

A pressure reducer device, for use in vehicle hydraulic brake systems, has a piston mounted for sliding movement in a cylinder, the pistonhead subdividing the cylinder into high-pressure and low-pressure chambers, communication between which is controlled by a resilient annular packing cooperating with the piston head. This invention concerns the improvement whereby an annular collar is mounted for sliding movement in the cylinder in proximity to the annular pistonhead packing to serve as a stop engaged by one end of a spring located in the high-pressure chamber. The spring bears at its other end against an annular seal for the passage of the piston rod through an end wall of the cylinder, and the annular collar has on its external surface remote from the pistonhead packing a recessed cylindrical portion of the smaller diameter than the internal diameter of the cylinder and which is disposed opposite an inlet port in the cylinder wall for connection to a master cylinder.

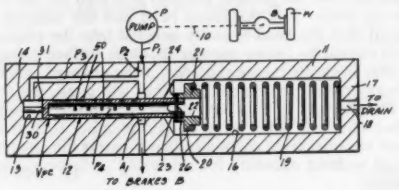


3,597,010

PRESSURE CONTROL VALVE

George A. Berman, Detroit, and Graydon J. Choinski, Utica, both of, Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Nov. 21, 1969, Ser. No. 878,665
Int. Cl. B60t *8/06, 13/16*
U.S. Cl. 303—10 **2 Claims**



A pressure-compensating valve for use with a hydraulic skid control brake system wherein a cylindrical bar stock piece is machined to provide a center flow pintle cooperable with an annular scanning annulus, thereby to provide a stepped and partially infinitely variable valve which permits partial or full diameter area sections to freely be sensed in a balanced state relieving any tendency for the pressure-compensating valve to bind or otherwise develop hydraulic imbalance.

3,597,011

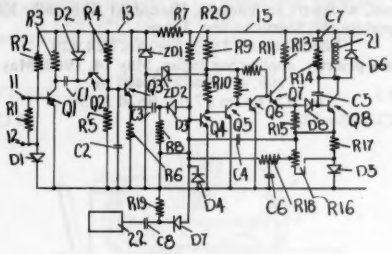
SENSING CIRCUIT FOR USE IN VEHICLE BRAKING SYSTEMS

Stanley Clifford, Mount Nod, Coventry, England, assignor to Girling Limited, Birmingham, England

Filed May 13, 1969, Ser. No. 824,200
Claims priority, application Great Britain, May 22, 1968, 24402
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 **6 Claims**

In a vehicle braking system means is provided for sensing the deceleration of a wheel, and means is also provided whereby the brakes can be released to prevent skidding. The usual arrangement is to release the brakes when the deceleration signal reaches a predetermined magnitude, but in accordance with the invention, a control circuit is used for

partly releasing the brakes at a predetermined deceleration signal below the signal at which skidding will start, and then



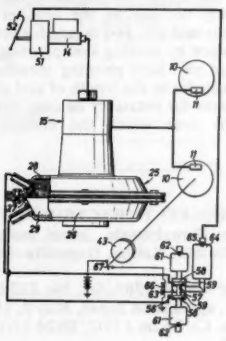
progressively releasing the brakes with increasing deceleration.

3,597,012

LIQUID PRESSURE BRAKING SYSTEMS FOR VEHICLES

Mervyn B. Packer, and Gordon W. Judge, both of Leamington Spa, England, assignors to Automotive Products Company Limited, Leamington Spa, England

Filed May 1, 1969, Ser. No. 820,917
Claims priority, application Great Britain, May 2, 1968, 20,774/68
Int. Cl. B60t *8/02*
U.S. Cl. 303—21 F **4 Claims**



A liquid pressure braking system for a vehicle in which a valve normally open to connect motor cylinders operating brakes to a source of liquid pressure, and a plunger movable to vary the volume of the part of the system between the said valve and the motor cylinders, are normally held in positions such that the valve is open and the said volume is a minimum by a fluid pressure servodevice having a movable wall, a skid-sensing device controlling valve means which cause simultaneous changes of fluid pressure on both sides of the movable wall to reverse rapidly the pressure differential across the movable wall and cause rapid closing of the normally open valve and movement of the plunger to increase the volume of the said part of the system when a tendency to skid is sensed.

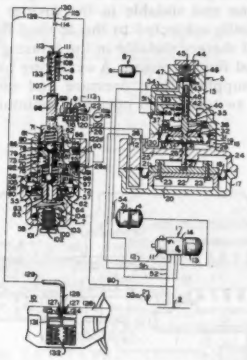
3,597,013

VARIABLE-LOAD BRAKE CONTROL APPARATUS

Shantilal N. Shah, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Apr. 3, 1969, Ser. No. 813,030
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 **15 Claims**

A railway car variable load brake control apparatus having a fluidic-jet load-sensing mechanism for interposition between a spring-supported (or sprung) part and an unsprung part of a car truck, the operation of which at the time of effecting a brake release provides a supply of fluid the pressure of which is in accordance with the weight of the load carried by the spring-supported part, this pressure being used to adjust the brake control apparatus to provide a braking force on the car in accordance with the load carried thereon.

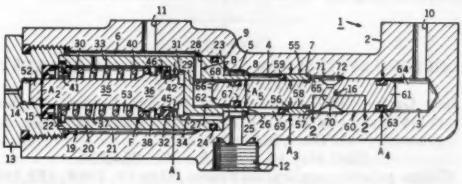


3,597,014

CONTROL VALVE

Stanley L. Stokes, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Sept. 26, 1969, Ser. No. 861,358
Int. Cl. B60t *11/34, 17/22*
U.S. Cl. 303—6 C **24 Claims**



A control valve for use in a split braking system with a split master cylinder including a housing having a divider portion therein provided with a flow passage for one of the supplied fluid pressures and a bypass passage connected in bypass relation therewith. A proportioning valve is movable in the divider portion controlling said flow passage to normally establish an applied fluid pressure in a predetermined ratio with the one supplied fluid pressure. A warning or switch operating piston compares the magnitudes of the supplied fluid pressures and in its normal or centered position closes the bypass passage, said switch piston being movable upon the failure of the other of the supplied fluid pressures toward a translated position opening the bypass passage to effect open pressure fluid communication between the one supplied and applied fluid pressures therethrough in bypass relation with the flow passage to obviate the proportioning function of the proportioning valve.

3,597,015

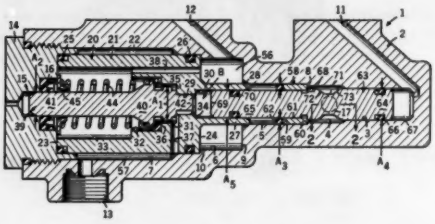
CONTROL VALVE

Stanley L. Stokes, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Jan. 26, 1970, Ser. No. 5,468
Int. Cl. B60t *8/26, 11/34, 17/22*
U.S. Cl. 303—6 C **10 Claims**

A control valve for use in a split braking system with a split master cylinder including a housing having a divider member therein provided with a flow passage for one of the supplied fluid pressures. A proportioning member is movable in the divider member controlling the flow passage to normally establish an applied fluid pressure in a predetermined ratio

with the one supplied fluid pressure. The flow passage also includes a branch or bypass portion normally subjected to the applied fluid pressure, and a warning or switch-operating piston has one end slidable in the divider member branch portion normally subjected to the applied fluid pressure and the other end thereof slidable in the housing subjected to the other supplied fluid pressure. A centering piston is subjected to the one supplied fluid pressure and engaged with said housing and switch piston normally maintaining said switch



piston in a centered position, and said switch piston is movable upon the failure of the other supplied fluid pressure toward a translated position opening the branch portion to effect open pressure fluid communication therethrough between the one supplied and applied fluid pressures to obviate the proportioning function of the proportioning member.

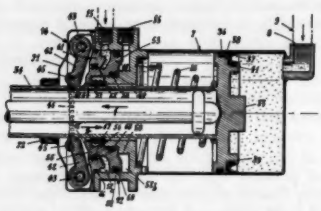
This invention relates in general to dual or split braking systems and in particular to a combustion driver warning, proportioning and bypass valve for utilization therein.

3,597,016

LOCKING SYSTEM FOR COMPRESSED-AIR BRAKES IN MOTOR VEHICLES

Jean Gachot, 179 Avenue de la Division Leclerc, Enghien (Vald'Oise), and Fernard Perales, 87 Rue A.G. Belin, Argenteuil, (Vald'Oise), both of, France

Filed May 15, 1969, Ser. No. 824,830
Claims priority, application France, May 17, 1968, 152,256
Int. Cl. B60t *13/36, 17/16*
U.S. Cl. 303—89 **12 Claims**



A locking system for compressed-air brakes of motor vehicles which comprises air-operated locking units for the operating rod of the brake cylinder, characterized in that it comprises two similar circuits for the distribution of air to the locking units and means for delivering air under pressure selectively into either of said two circuits in order to cause respectively the locking or release of the brakes.

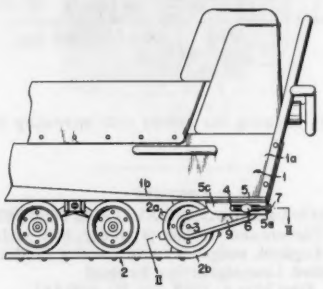
The two air distribution circuits aforesaid each comprise a bypass for delivering air under pressure into the brake cylinder so that the system is thus permitted in the release position to serve as an emergency brake during normal running of the vehicle.

3,597,017

DEVICE FOR TENSIONING AN ENDLESS TRACK BELT

Kenzo Tanaka, and Yutaka Masaoka, both of Shizuoka-ken, Japan, assignors to Yamaka Hatsudoki Kabushiki Kaisha, Hamakita-shi, Shizuoka-ken, Japan

Filed May 14, 1969, Ser. No. 824,629
Claims priority, application Japan, May 14, 1968, May 18, 1968, 43/39462,43/40726
Int. Cl. B62m *27/02;* **B62d** *55/30*
U.S. Cl. 305—32 **5 Claims**



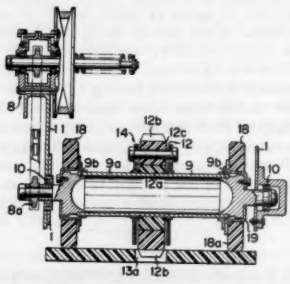
A tensioning device comprises a bracket attached to the frame of an endless-belt traction vehicle and provided with a slit extending in the lengthwise direction thereof, a pivoting member adjustably secured to the bracket with its body partly inserted into said slit, and means for setting said pivoting member in place by moving said pivoting member along the length of said slit. Said pivoting member extends in a direction perpendicular to the length of said slit and rotatably supports a rear arm for rotatably bearing the rear axle of a wheel or wheels over which the endless track belt is stretched.

3,597,018

ENDLESS-BELT TRACTION VEHICLE

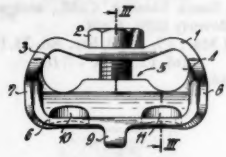
Yutaka Masaoka, Hamakita-shi, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Hamakita-shi, Shizuoka-ken, Japan

Filed May 8, 1969, Ser. No. 823,060
Claims priority, application Japan, May 9, 1968, 30789/68
Int. Cl. B62m *27/02;* **B62d** *55/12*
U.S. Cl. 305—35 **5 Claims**



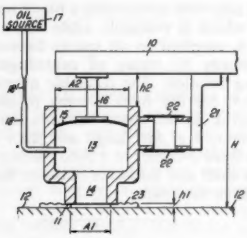
At least one of the sprocket wheels provided in an endless-belt traction vehicle involves an outer ring, and an inner ring of natural or synthetic elastomeric resin having an axial bore into which is securely inserted an axle carried on the vehicle body. Said outer ring is attached to the axle by means of fixing members in a manner to be radially movable, though immovable in the rotating direction of the axle.

3,597,019
TRACK LINK FOR AMPHIBIOUS AND CROSS-COUNTRY TRACK-LAYING VEHICLES
Otto Korner, and Fritz Benninghoff, both of Remscheid, Germany, assignors to Diehl K. G., Remscheid, Germany
Filed Jan. 28, 1969, Ser. No. 794,503
Claims priority, application Germany, Jan. 30, 1968, P 16 80 835.8
Int. Cl. B62d *55/26*
U.S. Cl. 305—54 **1 Claim**



A connector having chain-bolt-receiving eyes for interconnecting successive chain links of the track chain of amphibious and cross-country track-laying vehicles, which includes ladle-shaped plate means for bottom surfaces provided with rib means and having lateral walls extending upwardly to approximately the level of said bolt-receiving eyes.

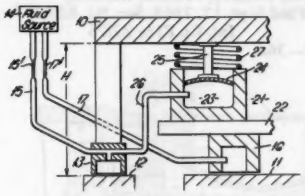
3,597,020
PRESSURE-LUBRICATED BEARINGS
Graham Isaac Thomas, Lennox Row, Edinburgh, Scotland, assignor to Ferranti, Limited, Hollinwood, England
Filed Mar. 7, 1969, Ser. No. 805,167
Claims priority, application Great Britain, Mar. 9, 1968, 11,632/68
Int. Cl. F16c *33/10*
U.S. Cl. 308—5 R **6 Claims**



A pressure-lubricated bearing to allow a sliding movement of a load over a fixed planar bearing surface while keeping substantially constant the height of the load above that surface over a wide range load weights includes a chamber filled with oil under pressure from a source and sealed at the top by an elastic diaphragm which supports the load. The other end contains a port through which a bearing film of oil escapes between the chamber and the planar surface. An increase in load weight reduces the film thickness; but the resulting increase of the oil pressure in the chamber displaces the diaphragm (and hence the load) upwards to compensate. Similarly with decreases of load weight.

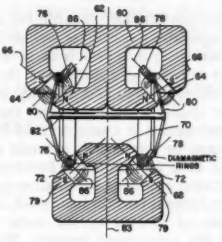
3,597,021
SLIDE BEARING SYSTEMS FOR VARIABLE LOADS
Graham Isaac Thomas, Edinburgh, Scotland, assignor to Ferranti, Limited, Hollinwood, England
Filed Mar. 24, 1969, Ser. No. 809,819
Claims priority, application Great Britain, Mar. 30, 1968, 15,441/68
Int. Cl. F16m *11/00*
U.S. Cl. 308—5 **4 Claims**

A bearing system in which a load (such as a worktable) is carried by a main bearing for a sliding movement over a plane surface while maintaining the height of the load above a plane reference surface constant despite variations in the weight of the load. That height is sensed by a reference pressure-lubricated bearing in engagement with the reference surface and the fluid pressure in it is applied to equalize the fluid pressure in an actuator located between the load and



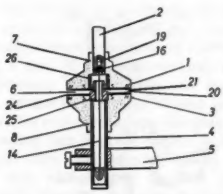
the main bearing so that any change in that height causes the actuator to adjust the distance between the load and the main bearing in a corrective sense.

3,597,022
DIAMAGNETIC LEVITATION AND/OR STABILIZING DEVICES
Robert D. Waldron, 5620 N. 69th Pl., Scottsdale, Ariz.
Filed July 22, 1969, Ser. No. 843,458
Int. Cl. F16c *39/06*
U.S. Cl. 308—10 **11 Claims**



Diamagnetic levitation and/or stabilizing devices, wherein diamagnetic members are levitated in relation to permanent magnets. Said magnets in repulsion levitation relative to each other are stabilized along one or more desired axes by means of diamagnetic members disposed about said axes, and in relation to fields of permanent magnets.

3,597,023
PERMANENT MAGNET BEARING
Max Baermann, 506 Bensberg, Bezirk, Cologne, Germany
Filed Sept. 10, 1969, Ser. No. 856,699
Int. Cl. F16c *39/06*
U.S. Cl. 308—10 **5 Claims**

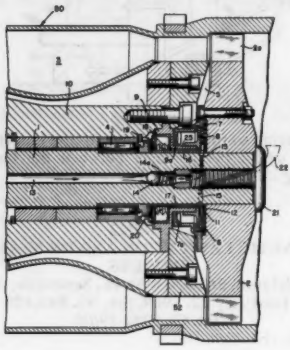


A permanent magnet bearing for use with apparatus of the type having a fixed member and a member rotatable with respect thereto. The bearing comprises a pair of bodies having first and second portions formed integrally with one another. Each first portion includes a pole surface so magnetized to bias said bodies into spaced-apart relationship. Each second portion includes connecting means for securing one of the bodies to the fixed member and the other of the bodies to the rotatable member.

3,597,024
LIQUID RING SEAL

Dietrich E. Singelmann, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft Mit Beschrankter Haftung, Munich, Germany

Filed Sept. 12, 1969, Ser. No. 857,337
Int. Cl. F16c *33/76*
U.S. Cl. 308—36.3 2 Claims

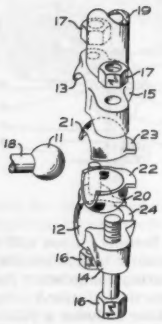


A liquid ring seal particularly suitable for shafts subject to high differential operating pressures across a rotatable element such as a turbine runner such as in a gas turbine includes means for supplying a lubricant through a central bore, through a check valve, and radially outwardly into a return conduction space formed adjacent the turbine runner seal gap. The construction is characterized by the formation of a throttle passage or gap which extends axially from the conduction space into an annular chamber having a ring valve which is located adjacent the shaft-supporting bearing. The ring valve produces a certain backwash or a longer dwell time of the lubricant stream in the zone of the packing directly adjacent the supporting bearing. When a predetermined backwash pressure is reached the valve lifts off its seat and the lubricant stream flows into the bearing. At least one of the throttle passages or control passages are provided for the discharge of the lubricant into the chamber alongside the support bearing.

3,597,025
MULTIPART BEARING LINER

Reginald K. Ringel, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 15, 1969, Ser. No. 824,979
Int. Cl. F16c *11/06*
U.S. Cl. 308—72 7 Claims

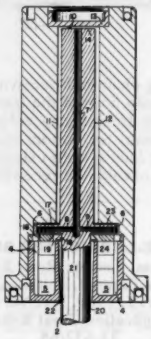


A bearing assembly comprises a multipart, semirigid bearing liner having a tang formed on at least one of the parts thereof. A recess, formed in the bearing assembly, mounts the tang therein to mechanically anchor the liner in position. In one illustrated embodiment, the recess is formed in a socket member of the bearing assembly whereas in a second embodiment the tang and recess are formed on adjacent parts of the bearing liner.

3,597,026
CENTRIFUGALLY PRESSURIZED LIQUID HYDRODYNAMIC BEARING

John J. Jarosh, Santa Monica, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed Mar. 19, 1970, Ser. No. 21,112
Int. Cl. F16c *17/10*
U.S. Cl. 308—134.1 5 Claims



In a bearing assembly comprising a block housing a flanged shaft, one of which is rotatable while the other is fixed, a fluid bearing is supplied to all spaces between the moving and fixed surfaces by virtue of centrifugal pressure differential during rotation. The rotatable member is provided with a reservoir for the fluid. During rotation, fluid flows from the reservoir to the space between the block and the outer circumference of the flange and then through a fluid passage in the fixed member to a fluid passage along the central axis of the shaft and the space between the block and the end of the shaft in the block.

3,597,027
THRUST BEARING

Walter B. Herndon, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.

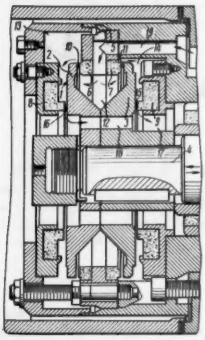
Filed Feb. 28, 1969, Ser. No. 803,284
Int. Cl. F16c *17/06*
U.S. Cl. 308—160 9 Claims

A thrust bearing having a plurality of radially extending lubrication grooves formed on the bearing face thereof, and shallow, radially extending relief sections formed on the other face thereof, directly opposite and wider than the lubrication grooves.

3,597,028
FLUID CONTACT THRUST BEARING OF DOUBLE ACTION

Viktor Vasilievich Ivanov, Krasnoprudnaya ulitsa, 26, kv. 26; Vladimir Karpovich Karakhaian, Stromynka, 23, kv. 131; Viktor Alexandrovich Senatorov, II Novo-Ostankinskaya, 27, kv. 61, Moscow, and Vyacheslav Alexandrovich Tarasov, ulitsa Pavlovskaya, 29, kv. 1, Elektrougli Maskovskoi oblasti, all of, U.S.S.R.

Filed Aug. 12, 1969, Ser. No. 849,347
Int. Cl. F16c *17/06*
U.S. Cl. 308—160 **2 Claims**



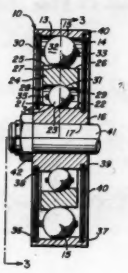
A fluid contact thrust bearing structure of double action, adapted for taking up axial loads in a machine, for example, in a centrifugal pump, comprises a journal plate fixedly secured to the rotary shaft of said machine, with bearing members disposed adjacent the face end surfaces of this journal plate and spaced therefrom. These bearing members are supported on a stationary part of said machine, which stationary part also houses passage means for supplying pressurized working fluid into an annular central chamber of the bearing structure. This central chamber communicated through a pair of annular outlet throttling gaps, defined between said bearing members and the respective adjacent face surfaces of said journal plate, with a pair of oppositely disposed lateral working chambers, which, in turn, communicate with a low-pressure chamber through a pair of outlet annular throttling gaps. A characteristic feature of the herein disclosed bearing structure in the fact that if the journal plate is axially displaced in operation, the axial extent of the inlet throttling gap associated with one of the two working chambers is reduced, and the axial extent of the outlet throttling gap associated with said one working chamber is increased, whereas the axial extent of the inlet throttling gap associated with the other one of said two lateral working chambers is increased, and the axial extent of the outlet throttling gap associated with said other working chamber is reduced; the inlet throttling gaps of the working chambers being spaced greater from the longitudinal axis of said journal plate than the outlet throttling gaps.

3,597,029
PLANETARY BEARING ASSEMBLY

Elias M. Marcum, 404 Swank Court, Union, Ohio

Filed Aug. 18, 1969, Ser. No. 850,906
Int. Cl. F16c *19/00*
U.S. Cl. 308—183 **8 Claims**

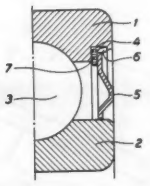
A bearing assembly incorporating at least one planetary race element between sets of bearings which are radially spaced and differentially sized. A preferred embodiment utilizes raceways the bearing surfaces of which are equidistantly and successively offset from a common plane of reference.



3,597,030
SEALING DEVICE FOR ROLLING BEARINGS

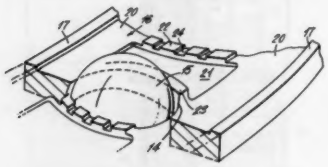
Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to Aktiebolaget Svenska Kullagerfabriken, Goteborg, Sweden

Filed Apr. 22, 1969, Ser. No. 818,264
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.2 **1 Claim**



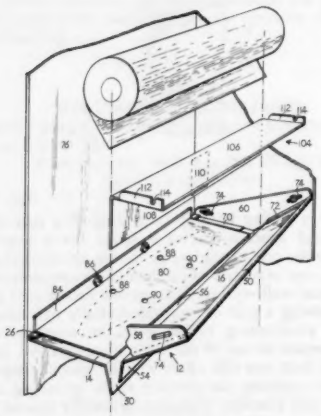
A seal for a rolling bearing consisting of a pair of rings radially spaced apart to define a space for a plurality of rolling elements, one of said rings having an annular groove spaced from one axial end of said ring by a circumferentially extending axial wall section, said groove facing said annular space and having a pair of circumferentially extending, axially spaced confronting radial walls, an annular resilient member mounted on one of the walls of said groove, said seal for sealing at least one side of the annular space comprising a body portion spanning the annular space including a radial wall portion and plurality of circumferentially spaced fingers projecting from said radial wall portion and extending generally transversely thereto, the circular trace of the terminal ends of the fingers in the relaxed state being of a diametral dimension in relation to the diameter of the axial wall section of said one ring so that upon installation of the seal, the fingers are displaced radially in one direction to permit passage of the seal past said axial wall section and deflect in a radial direction opposite said one direction when the seal is aligned with said groove so that the terminal ends of the fingers in the seated position of said seal engage one of the radial walls of said groove and the radial wall portion of said seal presses against the annular resilient member on the other radial wall of said groove.

3,597,031
BEARING
Arthur Bill, Derby, England, assignor to Rolls-Royce Limited, Derby, Derbyshire, England
Filed July 31, 1969, Ser. No. 846,370
Claims priority, application Great Britain, Aug. 29, 1968, 41370/68
Int. Cl. F16c *33/66*
U.S. Cl. 308—187 5 Claims



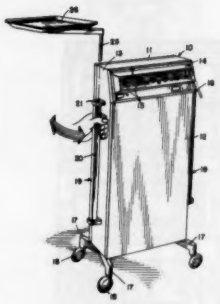
The invention concerns a bearing comprising concentric, annular, inner and outer races between which there is concentrically disposed an annular cage having pockets within which are retained rolling elements which are in rolling engagement with the inner and outer races, the radially inner surface of the cage being provided both with at least one journal portion which engages the inner race and with lubricant reservoir means which communicate with the said pockets for the supply of lubricant thereto.

3,597,032
TOWEL DISPENSER
Julius Harangozo, Toronto, Ontario, Canada, assignor to Watrous International Industries Limited, Don Mills, Ontario, Canada
Filed Oct. 20, 1967, Ser. No. 676,917
Claims priority, application Canada, July 24, 1967, 996,160
Int. Cl. B65h *19/02*
U.S. Cl. 312—39 2 Claims



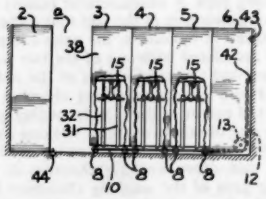
A towel dispenser constructed of two spaced-apart plates inclined downwardly towards each other is supported in a cabinet. The forward plate has a truncated elliptically shaped slot with parallel ends normal to the other plate. A removable adapter plate covers the elliptical slot and a vertical plate is held in one of two positions on the adapter plate. C-shaped towels are dispensed through the elliptical slot when the surrounding plate is in the forward position; when the dispenser is reversed with the adapter plate over the elliptical slot the end of a roll towel supported on the plates is dispensed between them and when the vertical plate is placed in position single fold or multifold towels resting on the spaced-apart plates may be similarly dispensed depending on the position of the vertical plate.

3,597,033
MOBILE DENTAL CONSOLE
Richard A. Slouka, Carpentersville, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Dec. 20, 1968, Ser. No. 785,675
Int. Cl. A47b *81/00*
U.S. Cl. 312—209 4 Claims



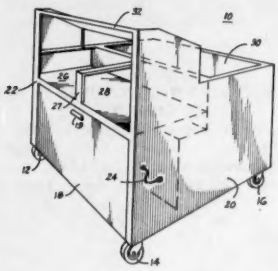
A dental console for supporting a plurality of dental instruments, the console being equipped with swivel casters which permit it to be moved about as desired. A pair of handles are provided for moving the console, the handles being mounted upon the console's sidewalls and being constructed and located to facilitate console movement. Such handles also serve as the mounting means for dental trays and other accessories.

3,597,034
STORAGE SYSTEM
Justin J. Wetzler, 1213 Circle Ave., Forest Park, Ill.
Filed July 14, 1969, Ser. No. 841,383
Int. Cl. A47b *53/00*
U.S. Cl. 312—199 8 Claims



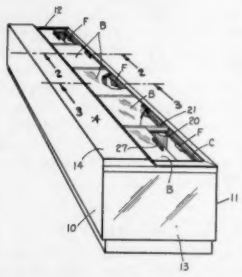
A storage system comprises a series of storage modules movable relative to one another to provide selectively an aisle space therebetween. The modules are selectively power driven through a drive bar that underlies the modules and is movable in opposite directions from a neutral position through a stroke sufficient to form the desired aisle after which a control circuit for the system automatically restores the drive bar to its neutral position.

3,597,035
FLOUR AND BATTER TABLE
George W. Church, Jr., and Ronald A. Miller, both of San Antonio, Tex., assignors to Church's Fried Chicken, Inc., San Antonio, Tex.
Filed Feb. 24, 1969, Ser. No. 801,604
Int. Cl. A97b *00/00*; **A41j** *43/22*
U.S. Cl. 312—210.5 **8 Claims**



Apparatus for economically and efficiently preparing fried food such as fast service fried chicken. The apparatus is characterized by a unitary construction in which flour and batter may be added to the food to be fried so that a substantially continuous cooking operation occurs.

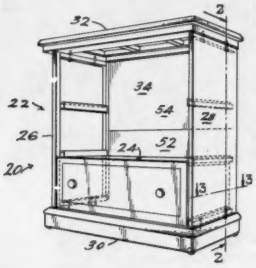
3,597,036
MULTICOMPARTMENT LOCKING ASSEMBLY
Herman L. Buffington, 1100 Partridge Road, Spartanburg, S.C.
Filed Apr. 6, 1970, Ser. No. 25,914
Int. Cl. E05b *65/46*; **E05c** *15/04*
U.S. Cl. 312—217 **5 Claims**



An elongated housing having a plurality of aligned doors capable of sliding in a horizontal position to open and close various compartments of the housing. A locking assembly capable of simultaneously locking all of the doors in the closed position. If desired, some doors can be maintained in the unlocked position while cooperating with an inwardly extending ledge for maintaining the compartment closed.

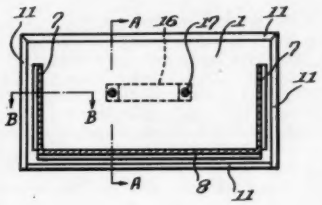
3,597,037
KNOCKDOWN FURNITURE CONSTRUCTION
Olley C. Lauber, Archbold, Ohio
Filed Sept. 15, 1969, Ser. No. 858,080
Int. Cl. A47f *43/00*, *47/00*
U.S. Cl. 312—257 **14 Claims**

Knockdown furniture construction for a chest of drawers is provided. This includes a chest or cabinet and a plurality of drawers, all of which can be shipped and stored in a flat state and assembled by the consumer. The cabinet includes two sides which are assembled with a base and a top through connecting joints. A back is made in two sections which are received in grooves in the sides. Each of the drawers has sides assembled with a front and back through connecting joints and with a drawer bottom held in grooves by the sides



and front and supported through the back by a separate connector. In a preferred form, the connecting joints comprise screws affixed to one component and openings formed in the other component to receive portions of the screws.

3,597,038
STEEL DRAWER
Kokichi Kunishima, Osaka, Japan, assignor to Kabushikikaisha Ithoki Kosakusho, Osaka, Japan
Filed Sept. 23, 1969, Ser. No. 860,306
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 **2 Claims**



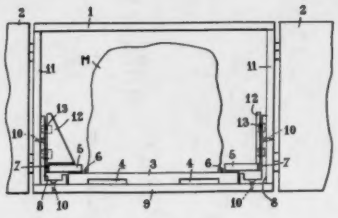
A front and a rear panel board constituting a front wall of a drawer having a backwardly and a forwardly bent flange on their edges, each of which flanges in turn has an inwardly or outwardly extending L-shaped flange. The L-shaped flanges on both lateral flanges of the rear panel board are cut off at their upper portions and the lower flanges are also cut off at their extreme ends. With the front and rear panel boards thus constructed, they are firmly secured to each other at their upper and lateral sides of the panel boards.

3,597,039
CONTAINERS FOR TRANSPORTING GOODS
Dieter Gruber, 31/35 Rue Saint-Ambroise, Paris, France
Filed Jan. 23, 1969, Ser. No. 793,305
Claims priority, application France, Jan. 31, 1968, 138,121
Int. Cl. A47b *97/00*
U.S. Cl. 312—352 **3 Claims**

The present invention relates to containers intended for holding goods during their transport.

The container according to the present invention comprises an internal device for holding against motion one or a plurality of pallets adapted to carry the goods to be transported when said pallet or pallets are laid on the floor of the container, said holding device comprising movable clamping members disposed above the lateral or transverse sides of the floor of said container so as to clamp the corresponding marginal portions of the pallet or pallets against the floor of the container.

The present invention relates also to a device for fastening and holding against motion one or a plurality of pallets inside

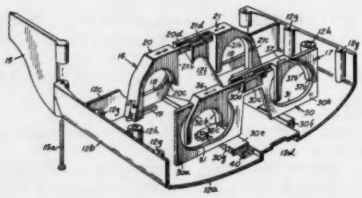


a transport container of any type in order to convert same into a pallet-carrier container.

3,597,040
TELESCOPIC SIGHT WITH BIASING SPRING
Hitoshi Gotoh, Suwa-shi, Japan, assignor to Light Optical Works Ltd., Suwa-shi, Nagano-ken, Japan
Filed June 27, 1967, Ser. No. 649,234
Int. Cl. G02b *27/32*
U.S. Cl. 350—10 **1 Claim**

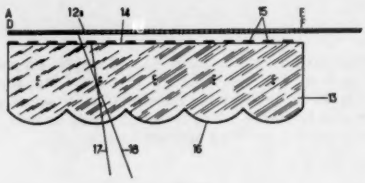
A rifle telescope of an inexpensive, yet extremely flexible, type incorporating means adjusting the position of the target image by transverse movement of collector lens elements while the image is in the inverted condition as received from the objective lens system of the telescope. The image erection lens system is rigidly mounted in the main telescope barrel as is the oscular lens system thereby providing a rifle telescope having substantially all of the critical lenses thereof rigidly, although adjustably mounted in the fixed telescope barrel and only a minimal collector lens system movably mounted.

3,597,041
HEAD SUPPORTED BINOCULAR INSTRUMENT WITH REPLACEABLE LENSES WORN AS GLASSES
Dolph G. Frantz, and William Joseph, both of 3427 Norman Bridge Road, Montgomery, Ala.
Filed Feb. 7, 1969, Ser. No. 797,514
Int. Cl. G02b *7/02*
U.S. Cl. 350—72 **5 Claims**



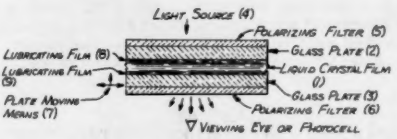
The binocularlike viewer has a casing that fits the forehead of the wearer and is held on by a pair of temples. There is a removable front transparent shield. The casing has bottom and top halves. The bottom half has formed therein a nose receiving recess. The rear wall of the casing has spaced apart horizontally elongated apertures for each eye. Mounted on the nose portion adjacent the rear wall is a lens system having the binocular eye pieces and prescription lenses for the wearer all of which are interpupillarly adjustable from a control outside the casing. There is mounted in the front for telescopic movement controlled from outside the casing, a framework with a pair of horizontally elongated apertures. This framework has mounted thereon a lens system having the front binocular lenses and replaceable framed lenses for near point vision for people with subnormal vision.

3,597,042
APPARATUS FOR VIEWING PICTURES IN APPARENT 3D EFFECT
Maurice Favre, Paris, France, assignor to CSF Compagnie Generale de Telegraphie Sans Fils, Paris, France
Continuation of application Ser. No. 412,661, Nov. 20, 1964, now abandoned. This application Nov. 5, 1968, Ser. No. 816,131
Int. Cl. G02b *27/22*
U.S. Cl. 350—144 **2 Claims**



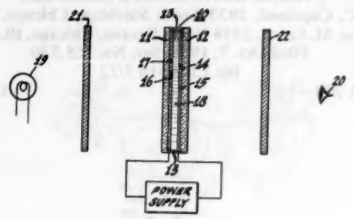
Method and device for viewing images, creating a depth sensation by masking a narrow vertical band on the left and right sides of the image, respectively, for the one and the other eye of the observer, by use of filtering devices, such as lateral bands made of complimentary colored material with appropriate spectacles for the viewer, or polarizing material with spectacles for the viewer, or of purely optical selectors without spectacles as double array of narrow opaque strips or transparent plates bearing prismatic lens gratings. The invention also provides for optical division of the entire picture in vertical narrow strips, horizontal translation in opposite directions of the odd and even strips, and selection for each eye of the two pictures thus created and shifted by usual filtering means including the masking of a narrow vertical band on the left and right sides of the respective images for the respective eyes of the observer.

3,597,043
NEMATIC LIQUID CRYSTAL OPTICAL ELEMENTS
John F. Dreyer, Cincinnati, Ohio, assignor to Polacoat Incorporated, Cincinnati, Ohio
Filed May 2, 1969, Ser. No. 821,444
Int. Cl. G02f *1/24*
U.S. Cl. 350—149 **19 Claims**



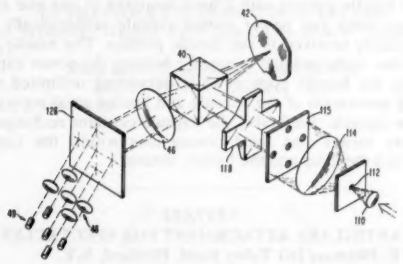
The production of visible motion patterns in a thin film of a nematic liquid crystal compound by inducing physical movement of the film, the film being formed between support plates at least one of which is transparent or translucent, means being provided to effect movement within the liquid crystal film.

3,597,044
ELECTRO-OPTIC LIGHT MODULATOR
Joseph A. Castellano, North Brunswick, N.J., assignor to RCA Corporation
Filed Sept. 3, 1968, Ser. No. 757,033
Int. Cl. G02f 1/34
U.S. Cl. 350—160 10 Claims



The light modulator is comprised of a nematic liquid crystal composition of p-acyloxybenzylidene anils and means for applying an electric field across the composition.

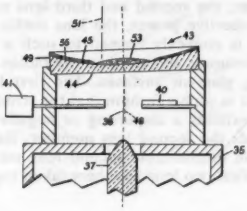
3,597,045
AUTOMATIC WAFER IDENTIFICATION SYSTEM AND METHOD
Einar S. Mathisen, Poughkeepsie, NY, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,765
Int. Cl. G02b 27/38
U.S. Cl. 350—162 SF 9 Claims



A method and system for the identification of semiconductor wafers. A code in the form of selected recognition symbols is inscribed in circuit-free regions or kerf areas of the wafer. In a separate operation, complex spatial filters of the entire set of recognition symbols are formed in spaced locations on a photographic medium. To detect whether a particular symbol has been inscribed in the wafer, the symbols within the wafer are cross-correlated with the complex spatial filters on the medium. The matching of a symbol with the complex spatial filter of that symbol produces a recognition spot of light behind the filter. A photodetector associated with each filter detects the light output when a match occurs.

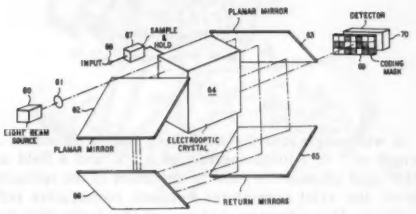
3,597,046
COATED LIGHT PERMEABLE OPTICAL COMPONENT
Harry E. Smithgall, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.
Division of Ser. No. 317,352, Oct. 18, 1963, Pat. No. 3,448,667.
Filed Sept. 27, 1968, Ser. No. 763,153
Int. Cl. G02b 1/10
U.S. Cl. 350—164 2 Claims

A coated light permeable refractive medium for use in an optical system to discretely attenuate radiant energy beamed from a controlled light source whereof an area of metallic coating is disposed on at least one surface of the medium by photosensitive deposition. The light attenuation characteristics of the refractive optical component are formed in



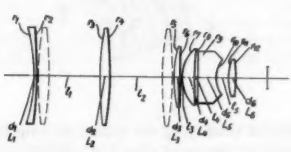
the photosensitive coating by the irradiation pattern of the light source in the system.

3,597,047
LIGHT BEAM DEFLECTION APPARATUS HAVING ENHANCED DEFLECTION BY MULTIPLE REFLECTION
Robert L. Carbrey, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 13, 1969, Ser. No. 833,115
Int. Cl. G02f 1/26
U.S. Cl. 350—150 12 Claims



The incremental index of refraction change due to the properties of electrooptic material is enhanced by providing multiple reflection of a light beam between mirrors disposed on opposite sides of the electrooptic material, particularly if one of the mirrors is concave and the other convex. A light beam deflector of this construction is disclosed in an analog-to-digital coder and is also well adapted for use in time-division multiplex systems.

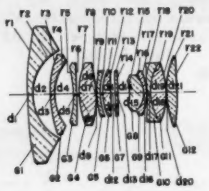
3,597,048
VARIFOCAL OBJECTIVE WITH MOVABLE LENS COMPONENT OF POSITIVE REFRACTIVITY
Ludwig Bertele, Sartenstrasse, Heerbrugg, Switzerland
Continuation-in-part of application Ser. No. 391,528, Aug. 24, 1964, now Patent No. 3,466,113, dated Sept. 9, 1969. This application Feb. 7, 1969, Ser. No. 797,455
Int. Cl. G02b 15/14
U.S. Cl. 350—184 10 Claims



A variable focal length objective of simple physical construction affording a relative aperture of 1:1.4 or greater and an image forming power that meets high requirements. The

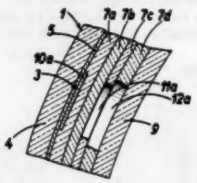
objective comprises at least 6 lens members, the second lens member being displaceably mounted so as to change the focal length. With respect to the side of the longer conjugate, the first lens member of theobjective has a dispersing or negative power, the second and third lens members have a positive or collective power, the lens surface of the fourth lens member is convexly formed to such a degree that its radius of curvature is shorter than the radius of curvature of the preceding glass-air surfaces. The first lens member is further shaped in such a fashion that the stronger curved surface thereof exhibits a dispersing or negative power and is curved towards the second lens member. Regardless of the position of the displaceable second lens member the focal length of the first two lens members taken together is always positive.

3,597,049
EXTREME WIDE ANGLE LENS SYSTEM
Toshinobu Ogura, Sakai-shi, Japan, assignor to Minalta Camera Kabushiki Kaisha, Isaka, Japan
Filed Mar. 25, 1969, Ser. No. 810,094
Int. Cl. G02b *13/00, 9/00*
U.S. Cl. 350—198 **3 Claims**



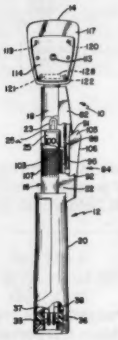
A wide-angle lens system having twelve elements, a focal length of 1.0, a focal aperture of 1:2.8, and a field angle of 180°, and wherein the radii of curvature of the refracting surfaces, the axial separations between consecutive refracting surfaces, the refractive indices of the individual lens elements, and the Abbe numbers for each of the lens elements are specified to correct lateral chromatic aberration.

3,597,050
TRANSPARENT ARTICLE HAVING MODIFIED RADIATION-TRANSMITTING PROPERTIES
Emile Plumat, Gilly, Belgium, assignor to Glaverbel, S. A., Watermael Boitsfort, Belgium
Filed Jan. 2, 1968, Ser. No. 695,259
Claims priority, application Luxembourg, Dec. 30, 1966, 52,726
Int. Cl. G02b *1/10*
U.S. Cl. 350—276 **11 Claims**



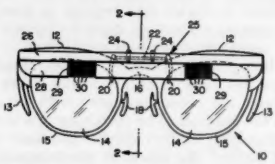
A method for modifying the radiation-transmitting properties of an article composed of at least one sheet having a substantial degree of transparency to radiation and at least one layer or sheet disposed adjacent the at least one sheet and forming a screen which serves to impart to the article as a whole a reduced degree of transparency to such radiation, the method involving reducing the transparency-attenuating effect of the screen in at least one zone of the article so as to give the article different transparencies at different zones thereof. Articles having a certain degree of transparency to radiation and having different degrees of transparency at different zones thereof.

3,597,051
STREAK RETINOSCOPE ASSEMBLY
Jacob C. Copeland, 2933 North Sheridan, Chicago, Ill., and Walter M. Lewis, 3539 North Kenton, Chicago, Ill.
Filed Oct. 7, 1968, Ser. No. 765,530
Int. Cl. A61b *3/12*
U.S. Cl. 351—16 **15 Claims**



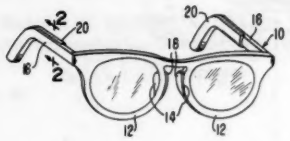
A streak retinoscope assembly comprising a generally tubular handle portion with a head mounted at one end and a unitary lamp and power source capsule telescopically and detachably received in the handle portion. The handle portion also includes latch means for holding the power capsule within the handle portion while permitting unlimited rotational movement of the capsule and limited axial movement of the capsule. Preferably the capsule contains rechargeable battery means and fixed connections within the capsule between the lamp and the battery means.

3,597,052
ANTIGLARE ATTACHMENT FOR SPECTACLES
Paul E. Dittman, 161 Tobey Road, Pittsford, N.Y.
Filed May 22, 1969, Ser. No. 826,954
Int. Cl. G02c *7/16, 9/04*
U.S. Cl. 351—45 **2 Claims**



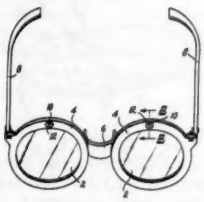
This device comprises an elongate bar and two laterally spaced groups of spaced parallel blades that are vertical when in use. The two groups of blades are disposed in front of two notches in a tinted plastic strip also carried by the bar. The bar may be removably secured on a spectacle frame by spring clips; and the spring clips may be fastened to a shaft pivotally mounted on straps that are secured to the bar; so that the antiglare device can be swung up out of the way during daylight or swung down in front of the spectacles for use at night or when the sun is low.

3,597,053
SPECTACLE FRAME HAVING HEAD CONFORMABLE PORTIONS
Gary J. Mastman, 5150 Graves St., San Jose, Calif.
Filed June 27, 1969, Ser. No. 837,180
Int. Cl. G02c *1/00*
U.S. Cl. 351—41 **8 Claims**



A spectacle frame having a nose portion and a pair of temples, with the nose portion and the temples having surfaces which normally engage the nose, head and ears when the frame is worn. A material is applied in layers to the surfaces of the nose portion and temples which normally engage the nose, head and ears. The material is of a type which conforms to the nose, head or ears when the material is at a predetermined temperature and when the frame is placed on the wearer. In one embodiment, the material is conformable at ambient temperatures and in another embodiment, the material is thermoplastic and becomes conformable upon being heated to a relatively low temperature above ambient temperatures.

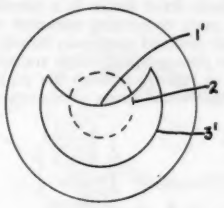
3,597,054
ULTRAVIOLET WARNING SPECTACLES
Peter McGowin Winter, 4927 Jamestown Road, Washington, D.C.
Filed Dec. 17, 1969, Ser. No. 885,675
Int. Cl. G02c *1/00*; **G01t** *1/02*
U.S. Cl. 351—158 **5 Claims**



A pair of spectacle is provided with one or more bodies or chips of material that respond to ultraviolet radiation to produce different visible effects depending upon the ultraviolet intensity. The bodies are mounted outside the normal field of view of the wearer but within the field of his peripheral vision so that the wearer may constantly monitor his exposure to ultraviolet and determine when it approaches a level to which he is unduly sensitive.

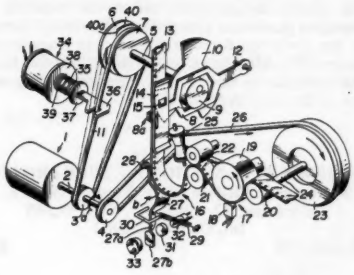
3,597,055
MONOCENTRIC BIFOCAL CONTACT LENS
Charles W. Neefe, Box 361, Big Spring, Tex.
Continuation-in-part of application Ser. No. 570,107, July 11, 1966, now Patent No. 3,440,306, dated Apr. 22, 1969. This application Jan. 28, 1969, Ser. No. 794,723
Int. Cl. G02c *7/04, 7/06*
U.S. Cl. 351—161 **1 Claim**

A monocentric simultaneous vision bifocal contact lens having an embedded high index near vision segment and



producing a vertical gradient focus visual effect.

3,597,056
FILM MOVEMENT EQUALIZING DEVICE FOR A MOTION PICTURE SOUND PROJECTOR
Kenji Sasaki, Suwa-shi, Japan, assignor to Sankyo Kogaku Kogyo Kabushiki-Kaisha, Suwa-shi, Nagono-ken, Japan
Filed July 14, 1969, Ser. No. 841,491
Claims priority, application Japan, May 22, 1969, 44/39,788
Int. Cl. G03b *31/02*
U.S. Cl. 352—14 **7 Claims**

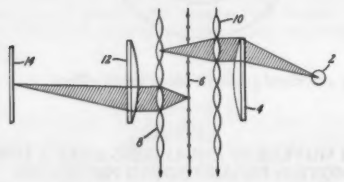


A shutter shaft operates film advance means for moving the film past a film gate, and has two pulleys, of different diameters, secured thereto in juxtaposed relation. The pulleys are belt-driven from a small drive pulley on the output shaft of an electric motor, and a solenoid-operated shifter is engaged with the belt to shift the latter between the two differing diameter pulleys. When the belt is engaged with the smaller diameter pulley, the shutter shaft is rotated at 0.5 r.p.m. higher than the average r.p.m. and, when the belt is engaged with the larger diameter pulley, the shutter shaft is rotated at 0.5 r.p.m. lower than the average r.p.m. The motor output shaft contains a drive pulley connected by a belt drive to a flywheel driving a capstan for advancing the film through a sound reproducing section. A film loop is formed between the film gate and the sound reproducing section and a loop size detector is pivotally mounted to engage the film loop. The detector includes an obturator positioned to control the light incident upon a photoelectric transducer in accordance with the size of the film loop. The solenoid operating the belt shifter is controlled by an electric circuit including the photoelectric transducer. In one embodiment, the film may be advanced past a film gate in either a normal direction or a reverse direction, and the loop size detector is conditioned to operate with both directions of film advance, by cam means associated with a shaft controlling a switch which, in turn, controls the direction of operation of the film-driving motor.

3,597,057
CONTINUOUS MOTION PICTURE PROJECTOR
William C. Yager, Blue Bell, Pa., assignor to General Electric Company
Filed Nov. 13, 1968, Ser. No. 775,378
Int. Cl. G03b *41/02*
U.S. Cl. 352—81 **4 Claims**

A projector for producing moving images free of the frame to frame discontinuities of conventional projection systems

comprises a fixed condenser lens and a fixed objective lens for respectively collimating a radiant energy signal and focusing collimated energy at a screen or image receiver. Interposed between these fixed lenses is a plurality of smaller image producers, each comprising elements of similarly arrayed pluralities of nonfixed condenser lenses, objective lenses and sequential photographic image transparencies all of which are moved in registry through the projector. Because several of these individual image producers are within the



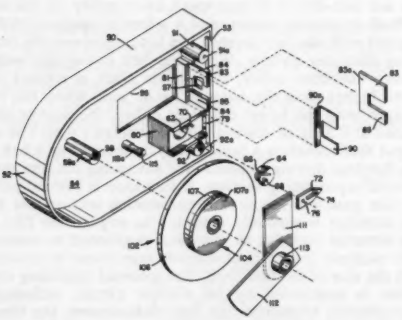
field of view of the fixed lens system at any one time, the final image produced by the fixed objective lens consists of a continuously changing combination of superimposed images from the smaller image producers. A combination of mask and particular geometric arrays of smaller image producers is used in the preferred form of the present invention to hold the number of smaller images combined into the final image constant and thereby to provide a nonvarying degree of illumination in the final image.

3,597,058

CARTRIDGE TYPE MOTION PICTURE PROJECTOR

Joseph T. Nicosia, 13 Hileen Drive, Kings Park, N.Y.

Filed Jan. 22, 1968, Ser. No. 699,549
Int. Cl. G03b *23/02*
U.S. Cl. 352—72 **12 Claims**



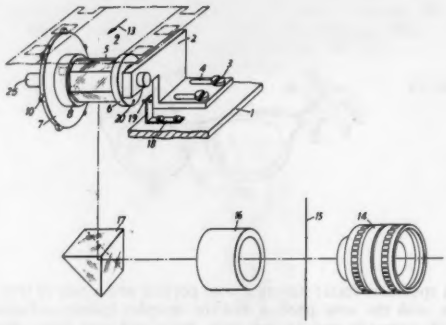
A cartridge type motion picture projector having a lens system, light source and drive motor as part of the projector housing. A cartridge containing the film and film drive mechanism is held to the projector housing with the light source in alignment with the film and the film gate aperture of the cartridge and the output shaft of the drive motor engaging the film drive mechanism of the cartridge. The film drive mechanism is of a simplified form including a pointed member which is shaped and driven to provide both reciprocating motion and a frame-by-frame advancement of the film. The lens system includes a light diffusing member which drops into position in the optical path when the projection is inverted so that it can function as a previewer.

3,597,059

SLOW-MOTION CAMERA

Herbert Gopfert, Dresden, Germany, assignor to VEB Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

Filed Sept. 13, 1968, Ser. No. 759,625
Int. Cl. G03b *41/08*
U.S. Cl. 352—84 **3 Claims**



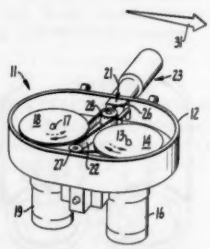
The slow-motion camera has a compensating prism rotatably mounted in a prism holder detachable from the camera housing. The prism is driven by a disengageable coupling from the film drive sprocket which moves in synchronism with the running of the film. When the coupling is disengaged a blocking pin secures the prism against rotation, with its parallel faces transversely of the optical axis.

3,597,060

CAMERA HAVING A HIGH SPEED DRIVE SYSTEM

Don L. Beaman, Sunnyvale, Calif., assignor to Red Lake Laboratories, Santa Clara, Calif.

Filed Sept. 24, 1968, Ser. No. 761,911
Int. Cl. G03b *41/00*
U.S. Cl. 352—84 **19 Claims**



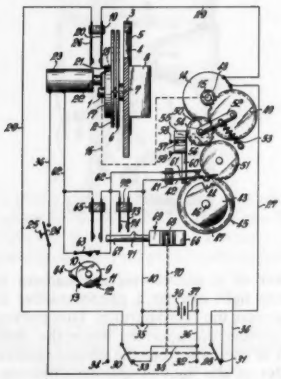
A camera having a high speed drive system particularly suited for streak cameras comprising a supply spindle for holding a supply reel, a takeup spindle for holding a takeup reel, means for directing film from the supply reel through an image receiving position to the takeup reel, with both the takeup reel spindle and supply spindle being equipped with motor drive means, and control means for controlling the motor drive means in response to the difference between a desired preset speed and the actual film speed and positively assuring that the supply motor does not overdrive, said control means also being formed to reverse the takeup mechanism and supply mechanism so that the film can be driven in reverse. Preferably the motors are electric motors and the control means is an electric control circuit formed to compare a signal indicative of the film speed with a reference to drive the takeup motor at the desired speed, and also being formed to drive the supply motor from means sensing the length and tension of the film between the supply reel and the takeup reel, with the supply motor being coupled to run only when the takeup motor runs; the circuit is also

formed for reversal of motor supply power to reverse the direction of the film. In addition, brake means are provided on each reel drive together with means for switching the operativeness of the brakes so that only the brake on the supply reel is active.

3,597,061
ELECTRICALLY OPERATED MOTION PICTURE CAMERA

Albert Stieringer, Calmbach, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Untertuerkheim, Germany

Filed Oct. 15, 1969, Ser. No. 866,522
Claims priority, application Germany, Oct. 16, 1968, P 18 03 336.8
Int. Cl. G03b *19/18*
U.S. Cl. 352—91 **10 Claims**



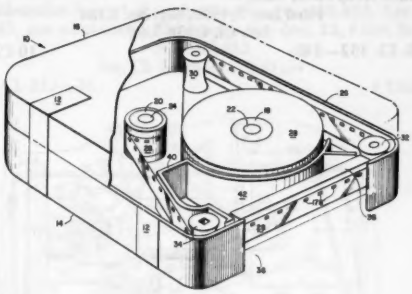
A motion picture camera wherein an adjustable dissolving shutter is driven by a reversible electric motor whose circuit can be completed in response to energization of an electromagnet and wherein the circuit of the electromagnet can be opened by either one of two arresting switches one of which is controlled by an adjusting member for the shutter and the other of which is controlled by a timer mechanism which can be coupled to the motor. The motor can be arrested only when the shutter assumes a position in which it prevents scene light from reaching a film frame, regardless of whether the electromagnet is deenergized in response to opening of a starter switch and/or in response to opening of one of the arresting switches.

3,597,062
MOTION PICTURE PROCESSING AND PROJECTION SYSTEM EMPLOYING MULTIPURPOSE CASSETTE

Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 23, 1968, Ser. No. 761,771
Int. Cl. G03c *11/00*
U.S. Cl. 352—130 **9 Claims**

A motion picture system utilizing cassette having two releasably connected sections. In one section respective ends of a strip of film are permanently attached to reels for reversible transport across a film gate, while the other section contains development fluid. Initially, when the two sections are connected together, the cassette is adapted to be positioned in a camera for exposure purposes. Subsequently, the two sections are separated and mounted independently in a unique projector in which the film is sequentially and simultaneously developed, by passing a loop thereof drawn from the film gate of the first section through the developing fluid contained in the second section, dried and projected through an appropriate optical system. Specially devised features are employed in the projector to release the development fluid from a sealed container into a reservoir section of the developing section of the cassette, to draw the loop of film from the film gate of the first section and insert the loop into the reservoir of development fluid, to dry the developed film

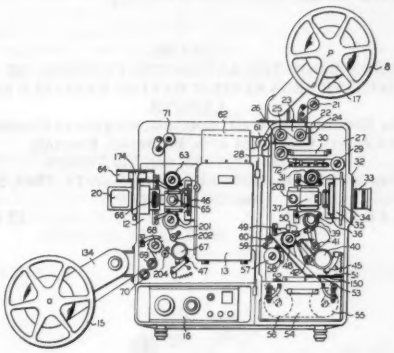


and to subsequently retain the development fluid in a safe manner.

3,597,063
ELECTROPHOTOGRAPHIC MOTION PICTURE APPARATUS

Yoshiki Hayashi, Osaka; Yoshihiko Yamamoto, Nara; Kenichi Hirai, Osaka, and Isao Ota, Osaka, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

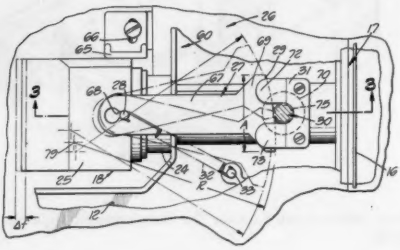
Filed May 22, 1968, Ser. No. 731,073
Claims priority, application Japan, Sept. 22, 1967, 42/61,355
Int. Cl. G03b *19/18*
U.S. Cl. 352—138 **7 Claims**



An electrophotographic apparatus utilizing a substantially flexible and transparent film which comprises laminations consisting in the following order from the bottom up, a transparent polymer sheet, a transparent conductive layer, a transparent adhesive layer, and an organic photoconductive insulating layer, and which further comprises a magnetic sound track on the back face thereof.

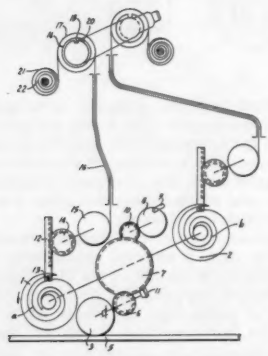
The apparatus has a corona discharge mechanism for applying in the dark a uniform electrostatic charge to the photoconductive top surface of the film; exposure apparatus for intermittently exposing the photoconductive surface of the film to a visible light ray image while simultaneously recording the corresponding sounds on the sound track; developing apparatus for applying in the dark a dispersion type liquid developer to the photoconductive surface of the film so as to produce a visible image on the surface; projection apparatus for intermittently projecting the visible images which are produced and simultaneously reproducing the corresponding sounds which were recorded on the sound track; and a mechanism for rewinding the developed and sound-recorded film for preservation.

3,597,064
FOCUSING ASSEMBLY FOR PROJECTORS
Guy C. Caraway, Downey, Calif., assignor to Technicolor, Inc., Hollywood, Calif.
Filed Jan. 7, 1970, Ser. No. 1,184
Int. Cl. G03b 3/00
U.S. Cl. 352—140 10 Claims



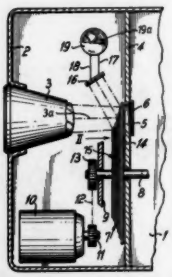
A focusing assembly for a projector, such as a cartridge loaded projector. The focusing assembly includes a cam device having one end coupled with a lens assembly and has a cam surface on the other end thereof. A shaft which is operated by a knob frictionally engages the cam surface. Rotation of the shaft pivots the cam which in turn causes the lens assembly to move back and forth along the longitudinal axis of the lens. The center point of the radius of the cam surface is offset from the longitudinal axis of the cam. This arrangement requires a substantial degree of rotation of the shaft to obtain full travel of the lens assembly and action in turn enables finer adjustment of focusing.

3,597,065
DEVICE FOR THE AUTOMATIC CONTROL OF AN OBJECTIVE LENS SYSTEM HAVING VARIABLE FOCAL LENGTH
Toma Radulet, Bucharest, Romania, assignor to Comitetul De Stat Pentru Cultura St Arta, Bucharest, Romania
Filed Mar. 6, 1968, Ser. No. 710,830
Claims priority, application Romania, Mar. 11, 1967, 53,291
Int. Cl. G03b 3/00
U.S. Cl. 352—140 12 Claims



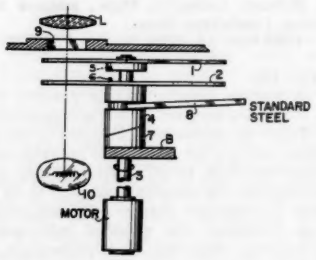
A device for automatically controlling and adjusting the focusing mechanism and the mechanism for varying the focal length of an objective lens system of a movie camera mounted on dolly. The device of the invention includes a pair of spiral cams which are operatively connected to one or more wheels of the dolly to the focusing mechanism and the means mechanism for varying the focal length of the objective lens system respectively.

3,597,066
MOTION PICTURE CAMERA
Theo Wilharm, Endersbach, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Untertuerkheim, Germany
Filed Aug. 2, 1967, Ser. No. 657,906
Claims priority, application Germany, Aug. 27, 1966, B88,666
Int. Cl. G03b 19/18
U.S. Cl. 352—141 15 Claims



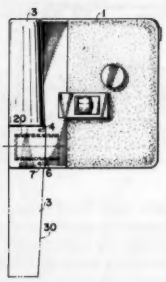
The shutter of a motion picture camera has a surface which reflects light against a photosensitive element when the shutter covers the film aperture. That portion of such surface which covers the aperture when the shutter is at rest reflects part of the light onto the photosensitive element and the remainder of the light in another direction. In this way, the amount of light received by the photosensitive element when the shutter is at rest is the same as the average amount of light reaching the photosensitive element when the shutter is in motion. The shutter may be of the rotary or reciprocatory type and its light-reflecting surface may be formed by a foil or by a coat of suitable reflecting material.

3,597,067
ONE FRAME FEEDING PROJECTION DEVICE FOR A FILM PROJECTOR
Yasutoshi Okuzawa, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Saitama, Japan
Filed June 17, 1969, Ser. No. 833,910
Claims priority, application Japan, June 25, 1968, 43/53747
Int. Cl. G03b 21/38, 9/16
U.S. Cl. 352—169 8 Claims



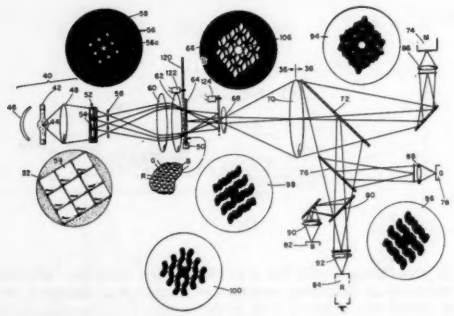
A film projection device employs a secondary shutter blade having a single shutter opening which rotates in synchronism with a standard multisector opening blade during manual single frame film feeding.

3,597,068
CINEMATOGRAPHIC CAMERA
Kazuo Masuyama, Nishimiya-shi, Hyogo, and Saichiro Ohashi, Nishimiya-shi, both of, Japan, assignors to Fuji Photo Film Co., Ltd., Kamigun, Kanagawa, Japan
Filed June 18, 1969, Ser. No. 834,256
Claims priority, application Japan, July 27, 1968, 43/53,099
Int. Cl. G03b *17/00*
U.S. Cl. 352—243 1 Claim



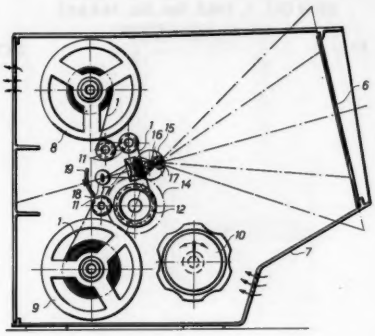
A grip for a movie camera serves as a lens cover by being rotated 180° about its pivot axis in front of the front face of the camera, with the motor serving as the pivot for rotation of the grip mounted at the front of the camera body.

3,597,069
COLOR TV FILM REPRODUCTION SYSTEM COMPATIBLE WITH DIFFRACTION PROCESS COLOR PROJECTION SYSTEMS
Russell M. Heinonen, Jr., Hudson, Mass., assignor to Technical Operations Incorporated, Burlington, Mass.
Filed Feb. 5, 1969, Ser. No. 796,873
Int. Cl. G03b *21/14*; G02b *5/18*
U.S. Cl. 353—20 5 Claims



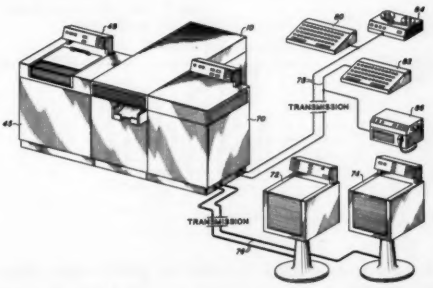
This disclosure depicts improved color television film reproduction systems capable of displaying either conventional color transparency cine film, or alternatively, by a diffraction process, cine records on which color separation information is stored as signals modulating separately detectable spatial carriers. The illustrated system comprises, inter alia, novel methods and apparatus making possible precise, rapid, and facile alignment of the optical systems in the projector and camera stages of the film reproduction system, and apparatus enabling rapid and simple conversion of the reproduction system from a conventional mode wherein color transparency film is used to a diffraction process mode wherein color-encoded monochrome film is used.

3,597,070
SYSTEM FOR INDEXING AND PROJECTING MICROFILM FOR SCANNING
Magne Slettebo, Presteveien 23, Kirkenes, Norway
Continuation-in-part of application Ser. No. 628,605, Apr. 5, 1967, now abandoned. This application Dec. 22, 1969, Ser. No. 887,423
Int. Cl. G03b *23/12*, *41/04*
U.S. Cl. 353—26 6 Claims



The invention relates to a device for storing, retracing and the projecting of information on microfilm stored on and movable between two reels, the device being provided with optical "arresting" means making at least the index for the stored information appear in a stationary picture when the film moves continuously, the microfilm being divided longitudinally to provide cue index symbols on one side corresponding to the text identified by the symbols on the opposite side of the microfilm, and the device having a viewing screen provided with openings through which the index symbols may be seen.

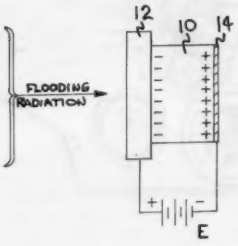
3,597,071
DIVERSE-INPUT SYSTEM FOR ELECTROSTATICALLY REPRODUCING AND RECORDING INFORMATION
Burton L. Jones, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Aug. 30, 1968, Ser. No. 756,598
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 13 Claims



A reproduction system of a single electrostatic processing printer and a plurality of different imaging input devices such as devices which are adapted to produce imaging light rays for the printer from such informational forms as video facsimile signals, microfilm, data processing information, light scanning platens for full size documents, aperture cards,

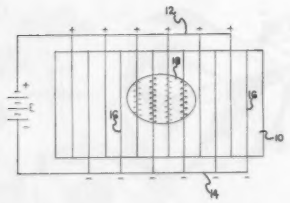
microfiche, etc. An interface connection is provided for the printer and any one or more of the input units. Paper input devices may also be arranged in the system for selectively feeding paper from different sources into the system.

3,597,072
ELECTRODE CONFIGURATION FOR ELECTROPHOTOGRAPHY
Felix H. Brown, East Lansing, and Robert N. Clark, Mason, both of, Mich., assignors to Owens-Illinois, Inc.
Filed Oct. 3, 1968, Ser. No. 764,683
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **2 Claims**



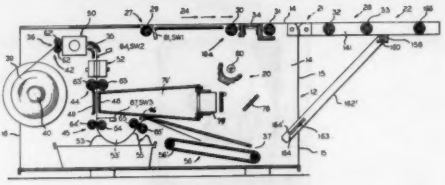
A persistent internal polarization (PIP) electrophotography printing or copying system wherein one electrode is nonremovable and has a discontinuous configuration, such as a wire screen mesh, which is embedded in or attached to the surface of a PIP layer and the other electrode is transparent so that each electrode is capable of simultaneously applying an electric field to the PIP layer, while permitting radiation to reach the PIP layer.

3,597,073
ELECTRODE CONFIGURATION FOR ELECTROPHOTOGRAPHY
John D. Grier, Okemos, Mich., and Owens-Illinois, Inc.
Filed Feb. 28, 1969, Ser. No. 803,353
Int. Cl. G03g *15/00, 15/02*
U.S. Cl. 355—3 **2 Claims**



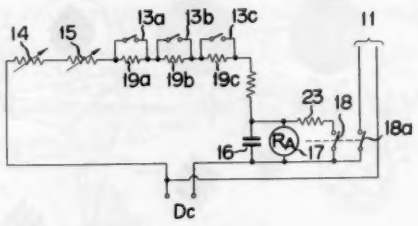
A persistent internal polarization (PIP) electrophotography printing or copying system wherein a pair of opposite polarity electrodes, each including a plurality of elements disposed in spaced array alternating with each other in the same plane, are utilized in combination with a PIP layer such that an electric field may be simultaneously applied to the PIP layer while permitting light radiation to reach the PIP layer. In the specific practice, the pair of electrodes are positioned on top of or embedded in the surface of the PIP layer which is to be toned; that is, the top surface.

3,597,074
COMBINATION SHEET AND BOOK COPY MACHINE
Karl M. Murgas, Lincolnwood; Burton Greenberg, Chicago, and Otto A. Clark, Chicago, all of, Ill., assignors to ICP, Inc., Skokie, Ill.
Filed July 18, 1968, Ser. No. 745,841
Int. Cl. G03b *27/58*
U.S. Cl. 355—25 **23 Claims**



A combination sheet and book copy machine having an original document transport system and a copy paper transport system for reproducing increments of a moving document onto a simultaneously moving length of photosensitive copy paper. The photosensitive copy paper may be individual sheets or a length pulled from a roll supply of copy paper and automatically severed from the roll. Converter means enables the original document transport system to be converted from a book copier to a rapid cycle sheet copier, or from a rapid cycle sheet copier to a book copier. The machine also includes means for reproducing multiple copies of an original document sheet or book.

3,597,075
PROCESSING DEVICE FOR USE WITH PHOTOCOPYING MACHINE
Yugoro Kobayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Dec. 11, 1968, Ser. No. 783,051
Claims priority, application Japan, Dec. 15, 1967, 42/80,083
Int. Cl. G03b *27/32*
U.S. Cl. 355—27 **1 Claim**

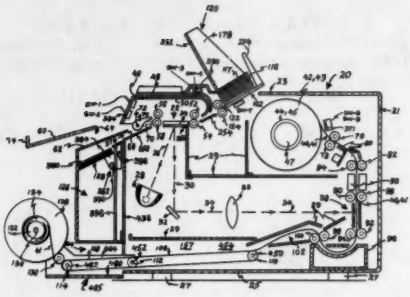


A processing device for a photocopying machine, wherein a plurality of detecting resistors in a capacitor charging circuit detect the width as well as the length of a photosensitive paper. The charging velocity of the capacitor is controlled in response to the number of detecting resistors actuated by the photosensitive paper. The quantity of processing solution is controlled in response to the charging velocity.

3,597,076
LABEL-MAKING SYSTEM
David W. Hubbard, Stamford, and Andrew W. Rastorguyeff, Norwalk, both of, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Jan. 17, 1969, Ser. No. 791,941
Int. Cl. G03b *27/70*
U.S. Cl. 355—29 **29 Claims**

A deck of tabulating cards having names and addresses printed thereon in legible form is used as a master mailing

list. The cards are passed through a photocopying machine which, in addition to the usual document copying facilities, has equipment for tabulating card handling. The cards are copied automatically in rapid sequence and in overlapping relationship, so that a series of names and addresses is printed on a continuous strip of copy paper with a minimum



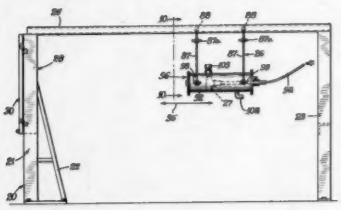
of blank space between. Various aspects of the operation of a conventional photocopying machine are altered to achieve a continuous card copying cycle. A continuous output strip emerges from the photocopying machine, and is subsequently processed by conventional labeling machinery which severs the strip into individual address labels and glues these to respective pieces of mail.

3,597,077

METHOD AND APPARATUS FOR MAKING SCREENED LITHOGRAPHIC AND GRAVURE PLATES

Fred H. Dorn, Cary, Ill., assignor to Acme Building Land Trust (No. 47912), Rolling Meadows, Ill.

Filed Apr. 9, 1969, Ser. No. 814,675
Int. Cl. G03b *27/66*
U.S. Cl. 355—71 **7 Claims**



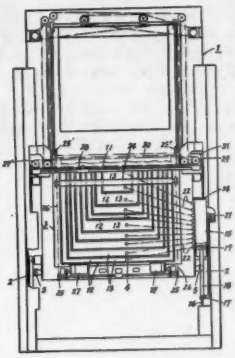
The subject method and apparatus is for making screened lithographic and gravure plates for use in printing. A live film is held in spaced-apart adjustably aligned position relative to a master screen disposed parallel thereto. An exposure lamp is adjustably positioned relative to the film and the master screen on an axial path extending through substantially the center of the film and screen. The exposure lamp is adapted to carry replaceable stops to project the image of the stop being used through the master screen to the live film. The apparatus has no housing—practice of the method and apparatus is in a darkroom.

3,597,078

DEVICE FOR CONTROLLING AUTOMATICALLY THE SUCTION ZONES OF VACUUM BACK IN PHOTOMECHANICAL CAMERA (2)

Yoshio Miyauchi, Hikone, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Nov. 18, 1968, Ser. No. 776,438
Claims priority, application Japan, Nov. 30, 1967, 42/76,396
Int. Cl. G03b *27/60*
U.S. Cl. 355—73 **4 Claims**



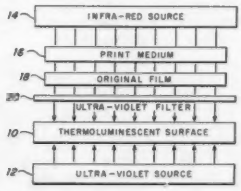
A vacuum back for a photomechanical camera including apparatus for automatically controlling the suction zones of the vacuum back. The vacuum back has a linear vacuum zone which defines the top of the film regardless of film size. The vacuum back is adapted for unilateral movement relative to its mounting so that various sizes of film may be properly centered with respect to the optical axis of the camera. The vacuum back further has a multiplicity of vacuum zones defining increasingly larger film size vacuum regions on the vacuum back. Each of the multiplicity of vacuum zones is connected to one of a multiplicity of vacuum connections on a cylinder connected to and vertically traveling with the vacuum back, so that movement of the vacuum back for properly centering the film also moves the cylinder with respect to a nonmoving piston therein and automatically applies the vacuum to the desired vacuum region.

3,597,079

IMAGE ENHANCEMENT APPARATUS AND METHOD USING A RADIANT SURFACE WHICH PRODUCES FREE HOLES AND ELECTRONS UPON EXCITEMENT

John Gioacchino Celi, Reading, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Feb. 28, 1968, Ser. No. 709,079
Int. Cl. G03b *27/76*
U.S. Cl. 355—80 **24 Claims**



Apparatus is disclosed for enhancing photographic images during printing which comprises an infrared light source, an ultraviolet light source, and a thermoluminescent surface. Enhancement is accomplished by exciting the thermolu-

minescent surface with ultraviolet light to generate holes and electrons therein and subsequently passing infrared light through a negative transparency and onto the excited thermoluminescent surface. The infrared light stimulates the thermoluminescent surface to emit actinic light which passes back through the negative and exposes a photosensitive print medium. The negative transparency provides attenuation of both the infrared radiation and the actinic light in direct proportion to the density of the transparency thereby enhancing the contrast of the photographic image in the print.

3,597,080

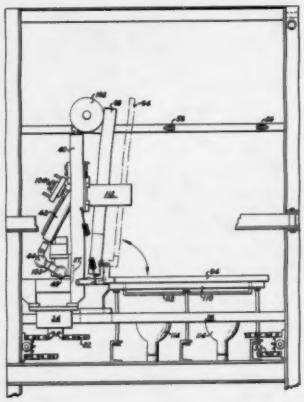
APPARATUS FOR PREPARING A PRINTING PLATE FROM A PHOTOSENSITIVE COMPOSITION

Donald P. Gush, Hyattsville; Manuel C. Uy, Glen Burnie, and Einstein E. Caicedo, Silver Spring, all of, Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of application Ser. No. 674,772, Oct. 12, 1967, now Patent No. 3,520,606. This application Oct. 25, 1968, Ser. No. 770,603

Int. Cl. G03b *27/30*

U.S. Cl. 355—85 **15 Claims**



The disclosed invention is for a photocomposing apparatus and improvements in a method of operating a photocomposing apparatus. The apparatus includes a housing having at one end an actinic light source and at the other end a support adapted to receive thereon a liquid photocurable composition which on exposure to actinic light through an image bearing transparency becomes selectively insolubilized in the exposed portions thereof. The invention is especially useful in preparing a developable printing plate from a liquid photocurable composition.

3,597,081

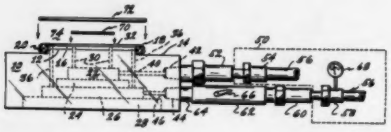
VACUUM MASKING SYSTEM AND METHOD

Donald Norman Cason, Oconomowoc, Wis., and Robert Louis Schaefer, Huntington Beach, Calif., assignors to Continental Device Corporation

Filed Nov. 2, 1967, Ser. No. 680,233

Int. Cl. G03b *27/20*

U.S. Cl. 355—91 **3 Claims**



The application discloses a vacuum actuated holding jig for use in the process of manufacturing semiconductor wafer elements. The jig is a small integral unit having two vacuum chambers therewithin each communicating with different areas on the wafer rubber mounting surface. A wafer may be temporarily held by one set of capillaries while a mask is emplaced thereover and clamped by a second set of capillaries. The first vacuum may then be released. The second vacuum is held by a toggle switch mounted on the jig unit whereby the vacuum secured jig-wafer-mask assembly may be removed from the vacuum system and handled independently for further processing.

3,597,082

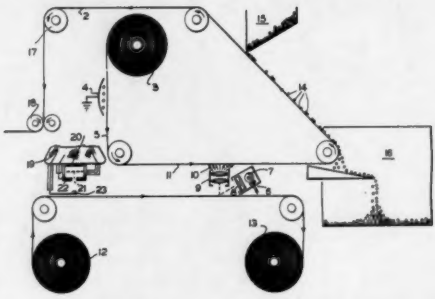
UNCOPYABLE PHOTOCHROMIC PAPER

Raymond W. James, Fitchburg; Wyman F. Uhl, Sterling, and Christo Antonio, Princeton, all of, Mass., assignors to Litton Business Systems, Inc.

Filed Feb. 20, 1967, Ser. No. 617,118

Int. Cl. G03g

U.S. Cl. 355—133 **5 Claims**



A photochromic paper having visible data thereon which, in response to radiation impinging on its surface, temporarily changes color to substantially match the color of the data thereby preventing copying therefrom.

3,597,083

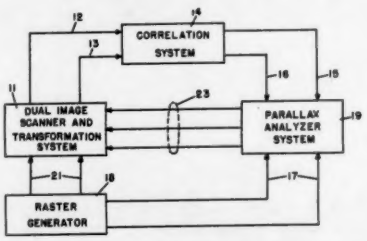
METHOD AND APPARATUS FOR DETECTING REGISTRATION BETWEEN MULTIPLE IMAGES

Robert M. Fraser, Lincoln, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 16, 1969, Ser. No. 816,730

Int. Cl. G01c *11/12*

U.S. Cl. 356—2 **15 Claims**



This disclosure relates to a method and apparatus for the detection of the relative distortion between two patterns. Analog video signals, obtained by synchronously scanning the two patterns, are converted to binary waveforms having level changes corresponding to zero crossings of the respective analog signals. The binary signals are then compared and the intervals of disagreement noted and assigned a plus or

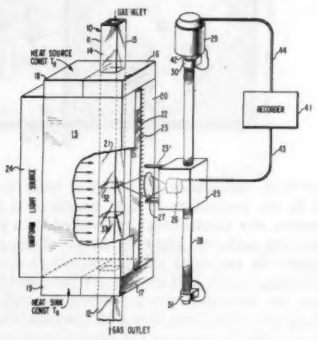
minus sign, depending upon which of the two signals initiated the disagreement. The algebraic sum of the disagreement intervals is shown to be of a magnitude and sign as will indicate the amount and direction of the distortion differences.

3,597,084

DELTA T-BAR SPECTROMETER READOUT DEVICE

Frank Pagano, Elnora, N.Y., assignor to Aero-Vac Corp., Troy, N.Y.

Filed Feb. 20, 1970, Ser. No. 12,990
Int. Cl. G01n 1/10
U.S. Cl. 356—37 10 Claims



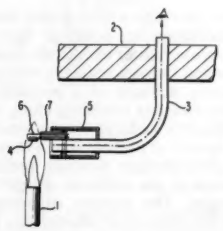
Extreme small percentage portions of an atmosphere are separated by condensation on a transparent, thermally conductive wall held to a known temperature gradient between a higher fixed temperature and a lower fixed temperature. Collection of an illuminated condensation product on this surface is observed by photocell probe by optical means through the transparent surface to provide either a photoelectric signal proportional to the amount of condensate collected or an optically measurable value. Indications of the positions of condensate portions provide product identification by calibrating the positions along the gradient.

3,597,085

FLAME INSPECTING DEVICE

Shigeo Kuwayama, and Motohiko Yagi, both of Odawara-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed Dec. 29, 1969, Ser. No. 888,660
Int. Cl. G01j 5/48
U.S. Cl. 356—44 5 Claims



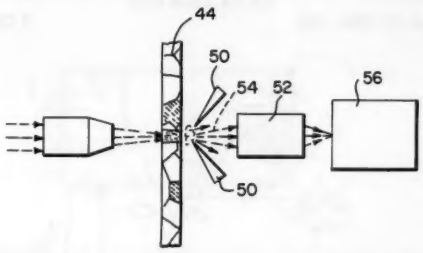
A transparent ceramic rod for viewing combustion flame carries a ceramic tube at its inner end having higher fire resistance than that of the ceramic rod with the end of the rod recessed therein. The flame is observed from the other end of the rod by the observer.

3,597,086

METHOD AND APPARATUS FOR LASER MICROANALYSIS

Martti Juhani Mela, Box 13067, Helsinki 13, and Martti Seppo Sulonen, Lielahdentie 2A21, Helsinki 20, both of, Finland

Filed July 28, 1969, Ser. No. 845,437
Claims priority, application Finland, Aug. 8, 1968, 2250/68
Int. Cl. G01j 3/30
U.S. Cl. 356—86 7 Claims



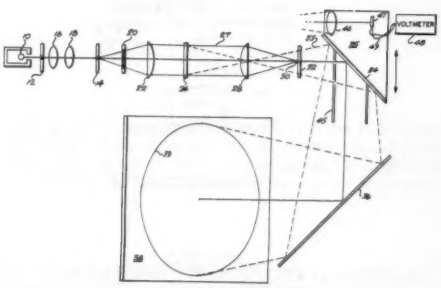
Apparatus for spectrographic analysis. The apparatus includes a laser light generator for producing a stream of laser light, which stream is focused by laser focusing optics on one side of a thin foil sample to be analyzed. Located on the side of the foil opposite the side upon which the laser light is focused are electrodes which can be utilized to assist ionization of the foil sample. Optics for collecting the resulting radiation from the plasma of the sample and directing such radiation to a spectroscope are positioned between the side of the foil facing the electrodes and the spectroscope. Method of utilizing such apparatus including maintaining the thickness of the foil sample so that the stream of laser light focused thereon penetrates the foil.

3,597,087

SAMPLE DEGRADATION DETERMINING METHOD AND APPARATUS

Donald W. Dunipace, Boulder, Colo., assignor to Ball Brothers Research Corporation, Boulder, Colo.

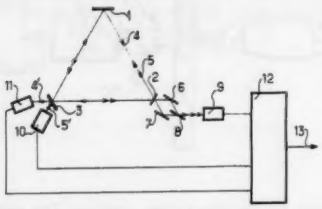
Filed Dec. 31, 1968, Ser. No. 789,038
Int. Cl. G01n 21/26
U.S. Cl. 356—103 17 Claims



Apparatus and method to monitor light scattered by a sample in the optical path of a light beam, which sample can be degraded by contamination deposits, imperfections, gaseous matter, and the like, which degradation causes scattering of light directed to the sample. A light beam from a simulated point source is focused by an optical element and directed to the sample, after which the image of the source is occulted so that any forward light thereafter is due substantially to unocculted light scattered by the sample. The scattered light is

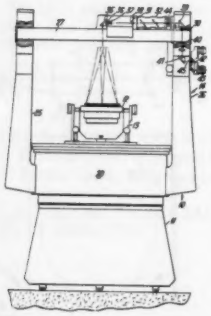
monitored beyond the image visually by an observer, and/or by utilization of photographic or photometric means, so as to provide an indication of the amount of scattered light and hence, an indication of the degree of degrading of a sample.

3,597,088
LASER GYROMETER
Jean-Michel Catherin, Savigny-sur-Orge, France, assignor to Compagnie Generale D'Electricite, Paris, France
Filed May 6, 1969, Ser. No. 822,262
Claims priority, application France, May 6, 1968, 150,745
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 **5 Claims**



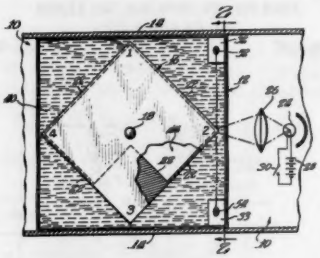
A laser gyrometer which is characterized in that it comprises means for detecting the power of each of the propagating waves, means for detecting the beat frequency of said propagating waves, and an electronic circuit introducing corrections with respect to the signal supplied by said means for detecting the beat frequency from the data furnished by said means for detecting the power of each of the waves.

3,597,089
TEST TABLE FOR A MAGNETIC COMPASS
David Scarth Ritchie, and Stanley James Law, both of Glasgow, Scotland, assignors to Barr & Stroud Limited
Filed May 12, 1969, Ser. No. 823,571
Claims priority, application Great Britain, June 13, 1968, 28,109/68
Int. Cl. G01c *17/38*
U.S. Cl. 356—139 **7 Claims**



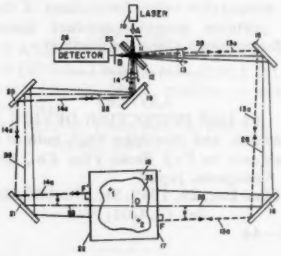
The invention provides a test table for magnetic compasses. Reading errors which occur during a large number of readings necessary in testing accurately a magnetic compass are mitigated by using an optical system which automatically compensates for misalignment of the system with respect to the compass card by mounting the optical system on a head which is temperature compensating to maintain the optical system in fixed relation to the compass test table.

3,597,090
LEVELLING INSTRUMENT USING A REFLECTIVE PENDULUM
David H. Humphrey, G.P.O. Box 2226, San Juan, P.R.
Filed Nov. 21, 1968, Ser. No. 777,790
Int. Cl. G01c *1/10, 9/12, 9/16*
U.S. Cl. 356—149 **8 Claims**



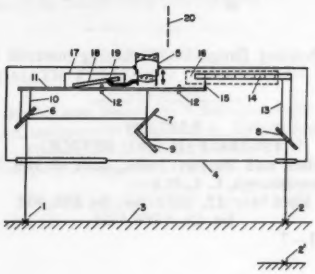
A levelling instrument in which a level condition is indicated by the projection of light beams on a pair of projection screens, the beams being controlled by a pendulum having reflecting surfaces. The movements of the pendulum may be damped by enclosing the pendulum in a chamber filled with damping liquid, and friction on the pivot for the pendulum may be minimized by providing a pendulum having a specific gravity matching that of the liquid fill. Signal means may be provided in place of the projection screens.

3,597,091
INTERFEROMETER
John Kent Bowker, Marblehead, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Jan. 18, 1968, Ser. No. 698,821
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 **22 Claims**



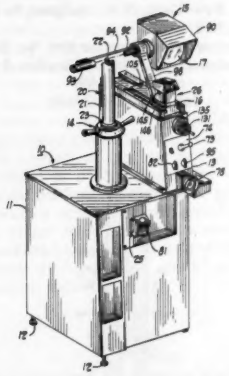
An interferometer with a laser source focused on a pinhole produces monochromatic, coherent light with a spherical wave front. A beam splitter divides the light along light paths which are directed through coupling mirrors to the opposing parallel reflecting surfaces of a movable rigid body stage plate. Reflected energies returning along incident paths normal to the reflecting surfaces are directed back through the beam splitter to an exit pinhole where they are combined and interfere. A photoelectric detector produces an electrical signal in response to the variation of light intensity of the interfering energies. The number of intensity changes, corresponding to the number of interference fringes, is accumulated in a fringe counter which produces a measure of the linear translation of the stage plate with respect to a fiducial indicating a reference point at the optical center of the system, i.e. the center of the light paths. An embodiment is described and illustrated for measuring two coordinates, e.g. a two axes measurement system. In one form a servo system in response to the counts for each axis positions a movable member.

3,597,092
INSTRUMENT FOR MEASURING A PROJECTED DISTANCE
Erik Niss, Lidingo, Sweden, assignor to AGA Aktiebolag
Filed Sept. 26, 1969, Ser. No. 861,434
Claims priority, application Sweden, Oct. 9, 1968, 13576/68
Int. Cl. G01b *11/02*
U.S. Cl. 356—156 **3 Claims**



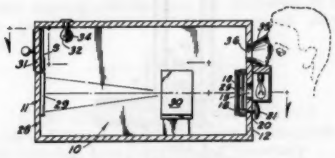
For measuring the projected distance between a pair of points, an optical lens system is arranged with its optical axis parallel to the direction of projection. The axis is deflected in opposite directions towards a pair of deflectors causing perpendicular deflections into directions parallel to the axis. The spacing between the deflectors is adjustable and can be read off from a scale. The lens system is adjustable parallel to the adjustment of the deflectors.

3,597,093
TOOL MEASURING AND INSPECTING APPARATUS
Heinz K. Wolf, Willoughby Hills, Ohio, assignor to The New Britain Machine Company, Cleveland, Ohio
Filed Mar. 24, 1969, Ser. No. 809,621
Int. Cl. G01b *9/08, 11/24*
U.S. Cl. 356—165 **15 Claims**



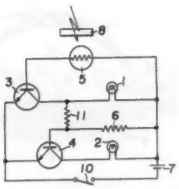
Tool measuring and inspecting apparatus especially adapted for setting and checking the dimensions of a boring bar and the like, including a vertically movable tool holder assembly for holding a tool in a vertical position, an optical projector assembly for viewing the cutting portion of the tool, means for vertically raising the tool holder assembly from a reference position below the projector assembly and for moving the projector assembly horizontally from a reference position, whereby the projector assembly can be centered on the cutting portion of the tool, and optical linear measuring systems for use in gauging the depth dimension of the tool along its vertical axis between a gauge line and the tool point and in gauging the diameter dimension of the tool along the axis of movement of the projector assembly.

3,597,094
PORTABLE COLOR IDENTIFICATION DEVICE
David G. Goldwasser, 751 Marietta St. N.E., Atlanta, Ga.
Filed Aug. 11, 1967, Ser. No. 660,063
Int. Cl. G01j *3/48, 3/52, 3/46*
U.S. Cl. 356—189 **2 Claims**



A portable color identification device which is used with a light source and visual observation for identifying the color of a given specimen and which includes a color reflecting surface, a plurality of filter means positioned between the light source and the color reflecting surface for filtering out selected wavelengths of the light that is transmitted from the light source, and a plurality of diaphragm means for allowing the passage of light in selective varying amounts from the light source to the color reflecting surface until the color of the reflecting surface matches that of the specimen.

3,597,095
PHOTOGRAPHIC EXPOSURE METER
Yoshio Fukushima, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 18, 1967, Ser. No. 639,521
Claims priority, application Japan, June 15, 1966, 41/38223
Int. Cl. G01j *1/44*
U.S. Cl. 356—226 **7 Claims**

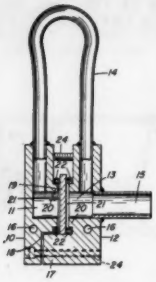


A photographic exposure material wherein the pilot lamps are utilized in conjunction with the amplifiers and whereby the proper exposure is obtained by comparing the brightness of one of the pilot lamps with the brightness of the other pilot lamp.

3,597,096
A CELL FOR THE SPECTROSCOPIC EVALUATION OF SAMPLES INCLUDING A FRUSTRATED INTERNAL REFLECTION PLATE
Herbert Burkhard, Eastchester, N.Y., assignor to American Cynamid Company, Stamford, Conn.
Filed Mar. 25, 1970, Ser. No. 22,418
Int. Cl. G01n *1/10*
U.S. Cl. 356—246 **16 Claims**

An improved cell offering a variety of advantages is provided wherein a multiple internal reflection spectroscopy plate containing a thin layer of finely divided catalyst deposited on each surface is sealably mounted between two rigid heatable body members each of which contains a com-

partment therein which communicates with the catalyst deposited on the plate. Both compartments intercommunicate thereby providing pressure equilibration on each side of the cell. Reactants at the desired pressure and temperature are introduced into the compartments and envelop the catalyst layers. A portion of the spectroscopy plate protrudes from the cell and is bombarded with appropriate radiant energy such as an infrared beam. The beam enters the plate,



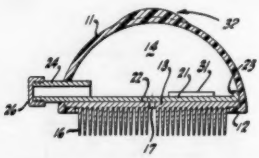
is reflected through the plate and catalyst deposited thereon, and emerges from the plate with substantially all resultant absorption of the radiation attributable to phenomena occurring within the catalyst layer; this occurs because at no time is the beam exposed to the environment of reactants and reaction products in the compartments surrounding the catalyst or to other environments which produce substantial amounts of undesirable background absorption. Various embodiments of the above-described cell are disclosed.

3,597,097

DISPENSING BRUSH WITH HOUSING VAVLE CLOSURE

Louis T. Kellis, 540 O'Farrell St., Apt. 405, San Francisco, Calif.

Filed May 21, 1969, Ser. No. 826,531
Int. Cl. A46b *5/02*
U.S. Cl. 401—6 **9 Claims**



A dispensing brush having a substantially rigid brush plate and a resilient housing atop same. A slide bar in the housing extends across the brush plate from engagement with one housing side through an opposite side of the housing with an aperture in the bar offset from an aperture in the brush plate longitudinally of the bar. Squeezing of the housing by pressure against the external end of the slide plate aligns the apertures for dispensing fluid contained in the housing and pressure release causes the resilient housing to force the slide bar back to original position.

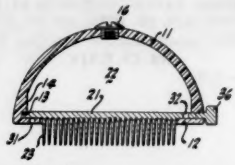
3,597,098

SQUEEZE BRUSH WITH ROTARY DISPENSER

Louis T. Kellis, 540 O'Farrell St., Apt. 405, San Francisco, Calif.

Filed May 21, 1969, Ser. No. 826,591
Int. Cl. A46b *5/02*
U.S. Cl. 401—6 **5 Claims**

A dispensing brush having a flexible housing that may be squeezed to force a fluid or the like therefrom and a rigid floor rotatably mounted in an internal groove about the bottom of the housing upon an internally extending flange thereof for controlled positioning to align openings in the



floor and housing flange for dispensing material from the housing.

3,597,099

FINGER-PAINTING DEVICE

Willism Tollin, and Harriet Tollin, both of 109 Woodlane South, Woodsburgh, L. I., N.Y.

Filed Mar. 12, 1969, Ser. No. 806,402
Int. Cl. A46b *5/04*
U.S. Cl. 401—7 **9 Claims**

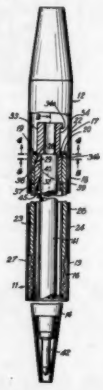
A device for finger painting or finger art. A cap member bearing paint or marking substance is attachable to the tip of the finger of the user. The cap member is flexibly or fixedly secured to a marking member which retains the paint or marking substance.

3,597,100

WRITING IMPLEMENT

Walter C. Ganz, New York, N.Y., assignor to K. C. Pen Co., Inc,, Brooklyn, N.Y.

Continuation-in-part of application Ser. No. 846,465, Aug. 31, 1969, now abandoned. This application Apr. 20, 1970, Ser. No. 29,890
Int. Cl. B43k *24/06*
U.S. Cl. 401—110 **12 Claims**



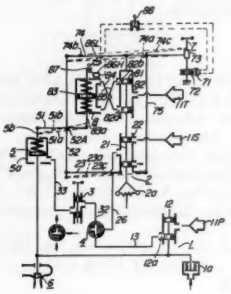
A retractable writing implement comprises a barrel including an integrally threaded upper section, and an upper cap

section rotatably supporting an externally threaded coaxial tubular actuator, which releasably engages the barrel threaded section. A cartridge carrier slideably and rotatably registers with the actuator upper portion. An inner arcuate flange affixed to the cap is spaced from the carrier to delineate a shoulder-terminated path along which is movable a finger affixed to the actuator to opposite ends of the path, and a finger projects from the flange into engagement with a vertical groove in the carrier. The carrier and actuator have complementing end-to-end cylindrical cams. Another embodiment restricts relative rotation of the cap and body by interaction of the cooperating cam surfaces.

3,597,101
AUTOMATIC FOLLOWUP CONTROLLER FOR A TURBINE

Matuto Kikuchi, and Tomoyuki Nakatsuka, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 9, 1969, Ser. No. 840,223
Claims priority, application Japan, July 10, 1968, 43/47761
Int. Cl. F01b *25/00*
U.S. Cl. 415—17 **7 Claims**



An automatic followup controller for a back pressure type or air bleed back pressure type turbine which can be operated under either of control operation and pressure control operation, in which means is provided for adjusting the setting of speed governor means to follow the actual operating condition during a pressure control operation and for adjusting the setting of pressure governor means to follow the actual operational condition during a speed control operation, so that, when the operational condition is switched from the pressure control operation to the speed control operation, or vice versa, no abrupt change in load or speed on the turbine or a generator connected to the turbine and a smooth conversion of operation can be performed, and selector means is provided in each of passages which supply pressurized hydraulic oil from said pressure governor means and said speed governor means and said speed governor means to a servomotor means which controls a turbine control valve, said selector means being operative to selectively direct pressurized hydraulic oil from either one of said governor means to said servomotor means.

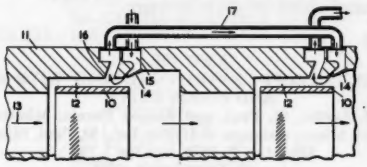
3,597,102
TURBINES

Robert George Unsworth, and Robert Keith Burton, both of Rugby, England, assignors to The English Electric Company Limited, London, England

Filed June 10, 1969, Ser. No. 831,963
Claims priority, application Great Britain, June 10, 1968, Aug. 12, 1968, 27442/68;38557/68
Int. Cl. F01d *11/00, 5/08*
U.S. Cl. 415—112 **4 Claims**

To prevent leakage of fluid through a clearance passage defined between a turbine rotor and stator, a duct is formed in the stator from which an annular jet of fluid can be directed into the passage. The jet forms a moving curtain of fluid between rotor and stator.

Axially adjacent the duct, a chamber may be formed in the stator, fluid from the curtain being deflected into the chamber and conveyed therefrom to a further duct in order

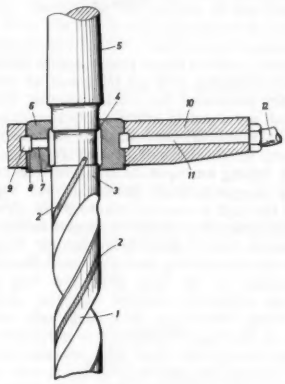


to provide a further moving curtain between rotor and stator. The further moving curtain may be provided in the same clearance passage or in another located downstream therefrom.

3,597,103
CHIP-REMOVING ROTARY TOOLS

Manfred Birk, Ebingen (Wurtt.), Germany, assignor to Firma Gottlieb Guhring, Ebingen, (Wurtt.), Germany

Filed May 1, 1969, Ser. No. 820,741
Claims priority, application Germany, May 15, 1968, P 17 52 365.8
Int. Cl. B23b *51/06*
U.S. Cl. 408—59 **6 Claims**

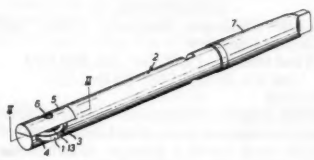


A twist drill or the like is provided with coolant ducts opening into a groove between the shank and fluted portions of the drill. The groove is surrounded by a stationary connector through which coolant is supplied.

3,597,104
REAMING TOOLS

Frederick James Salcumbe, Bromsgrove, England, assignor to Donald Frederick Jones, Bromsgrove, England, a part interest

Filed May 16, 1968, Ser. No. 729,598
Int. Cl. B23d *77/02*
U.S. Cl. 408—199 **9 Claims**



A reaming tool comprising a reaming cutter with opposed cutting edges and a toolholder with a slot or lateral through aperture for the reception of the cutter. The holder has

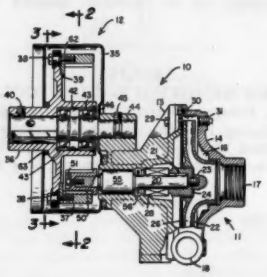
retaining means which act to retain the cutter within the slot or aperture with a limited degree of float radially of the reaming axis and generally in the plane containing the cutting edges, the float being in the form of guided sliding movement of the cutter within the slot or aperture.

3,597,105

POWER TAKEOFF CENTRIFUGAL PUMP WITH RING AND PINION DRIVE

Harry J. Sadler, St. Paul, and Ramon Pareja, Minneapolis, both of, Minn., assignors to Hypro, Inc., St. Paul, Minn.

Filed Jan. 9, 1970, Ser. No. 1,794
Int. Cl. F01d *15/08, 1/02*
U.S. Cl. 415—122 **8 Claims**



In combination, a centrifugal pump means having an enclosed pumping chamber with an inlet and an outlet, along with an impeller journaled for rotation within the chamber and a drive shaft arranged to provide rotational energy to the impeller; and a power-transmission means coupled to the centrifugal pump for driving the drive shaft, the power-transmission means having an input coupling for direct mounting onto a tractor power takeoff shaft with the input energy being coupled through a ring and pinion to the drive shaft for the pump. The power-transmission means comprises a ring and pinion system with a drive hub member which forms a portion of the input coupling being secured through suitable cushioning means, to the ring gear, the ring gear being fabricated from relatively durable material, and with the pinion gear being fabricated from relatively soft material such as nylon or the like. The pinion is mounted directly on the centrifugal pump drive shaft and provides its rotational energy. The rotating ring gear is coupled to the drive hub in such a way that limited relative arcuate motion may occur between these components within the power-transmission housing, the drive hub having a plurality of arcuate resilient pad-receiving slots formed therein, the ring gear having an outer cylindrical surface with a plurality of lugs secured thereto which are arranged to fit within the arcuate slots formed in the drive hub. The resilient pads have tip portions with a relatively reduced cross section, and a central body or shank portion with an enlarged cross section, these pads extending arcuately laterally on either side of the lugs on the ring gear and thereby adapted to permit limited relative arcuate motion between the drive hub and the ring gear in response to torque loading of the drive shaft.

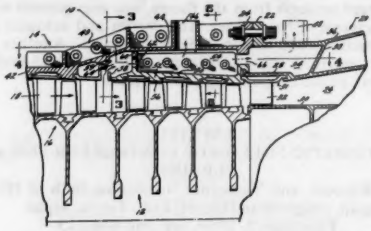
3,597,106

COMBINATION COMPRESSOR CASING-AIR MANIFOLD STRUCTURE

Bernard Joseph Anderson, Danvers, Mass., assignor to General Electric Company

Filed Oct. 24, 1969, Ser. No. 869,003
Int. Cl. F01b *25/00;* **F04b** *25/24*
U.S. Cl. 415—144 **6 Claims**

A gas turbine engine compressor casing structure is disclosed which provides a full annular bleed orifice for bleeding compressor stage air to a plenum chamber surrounding the aft stages of the compressor and thence to a full annular chamber adjacent the engine's combustion section. The compressor casing is constructed with an aft section which has an expanded diameter and is connected with the adjacent section of the engine structure by means of a bolted flange. A separate inner compressor casing is provided to support the latter stage stator vanes and telescopes within the outer casing. A lip is provided the forward end of the inner casing so that when it is assembled with the primary compressor casing, the lip forms in cooperation with the adjacent inner wall



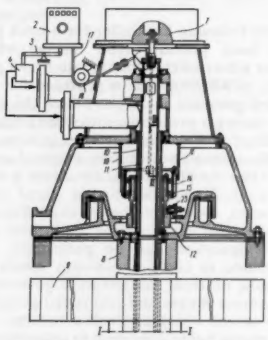
of the forward section of the primary casing an annular bleed orifice in the compressor inner wall. The full annular chamber is defined by an outer wall, an inner wall, and an end wall, and is in communication with the space between the aft section of the primary compressor casing and the inner compressor casing.

3,597,107

FEEDBACK APPARATUS FOR AN AUTOMATIC SPEED-GOVERNING SYSTEM OF A HYDRAULIC TURBINE

Gleb Stepanovich Schegolev, Sinyavinshkaya ulitsa, 12, kv. 29; Semen Abromovich Granovsky, Petrogeadskaya Storona, Bolshoi Prospekt, 17, kv. 13; Yan Frantsevich Bozhichka, ulitsa Stankhanovtsev, 9b, kv. 27; Valdimir Sergeevich Below, ulitsa S. Schedrina, 47, kv. 2, and Matveevna Dokumentova, Bolsheokhtinsky prospekt, 79, kv. 46, all of Leningrad, U.S.S.R.

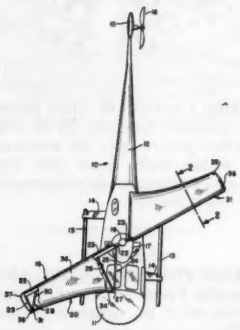
Filed Feb. 12, 1969, Ser. No. 798,711
Int. Cl. F01d *7/02*
U.S. Cl. 416—31 **3 Claims**



A feedback apparatus for an automatic speed-governing system of a hydraulic turbine comprises a driving means which includes a control drum external of said turbine and having a cam-shaped control surface. The control drum is operatively connected with the servomotor of the system and is adapted for being linearly displaced relative to the servomotor, yet to be jointly rotated with the servomotor. The driving means comprises an output link and a distributing valve connected to the output link and which is adapted to direct pressurized control fluid into corresponding spaces of the servomotor. The operative connection between the control drum and the servomotor provides for a limited displacement of the control drum axially of said turbine in the course of the joint rotation of the control drum with the servomotor. An abutment system is carried on the turbine and against which the control drum is permanently biased. Also included is a sleeve constituting an intermediary link adjacent the control drum. A bearing system is provided for supporting the

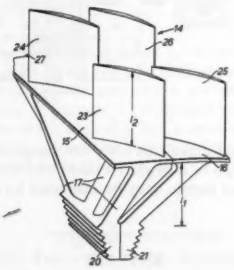
sleeve on the control drum for relative rotation therebetween. The sleeve is disposed for reciprocating motion axially of the turbine.

3,597,108
ROTARY SEMIRIGID AIRFOIL
John E. Mercer, 417 A. Butler Ave.; Thomas E. Sweeney, 61 Overbrook Drive, and S. Weissenburger, Mount Lucas Road, all of Princeton, N.J.
Filed May 28, 1969, Ser. No. 828,576
Int. Cl. B64c *11/26*
U.S. Cl. 416—139 13 Claims



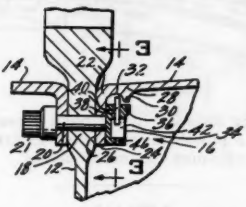
A semirigid airfoil for use with rotary wing airborne vehicles. The airfoil includes a rigid spar defining a leading edge, a cable defining the trailing edge and having a root end thereof secured to a root truss and an opposite end thereof secured to a tip truss. Flexible material forms top and bottom airfoil surfaces. Means are provided for controlling the tension in the trailing edge cable during rotation of the airfoil.

3,597,109
GAS TURBINE ENGINE AXIAL FLOW MULTISTAGE COMPRESSOR
James Alexander Petrie, Littleover, and Kenneth Edward George Bracey, Findern, both of Derby, England, assignors to Rolls-Royce Limited, Derby, England
Filed May 22, 1969, Ser. No. 826,803
Claims priority, application Great Britain, May 31, 1968, 26169/68
Int. Cl. F01d *5/30*
U.S. Cl. 416—198 5 Claims



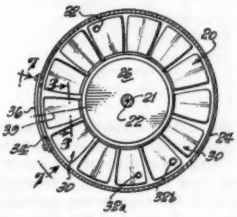
The invention concerns a gas turbine engine axial flow multistage compressor having a rotor member, and a plurality of platform elements each of which has rotor blade members mounted thereon and each of which is itself disposed radially outwardly of and spaced from the rotor member, the plurality of platform elements defining an annular platform member and the axially consecutive annular platform member of different stages of rotor blade members contacting each other to form a drumlike structure.

3,597,110
JOINT CONSTRUCTION
Robert J. Corsmeier, Cincinnati, Ohio, assignor to General Electric Company
Filed Oct. 23, 1969, Ser. No. 868,723
Int. Cl. F16b *43/00*; F01d *25/24*
U.S. Cl. 416—198 9 Claims



A joint construction incorporating a coacting bolt head-flange structure is disclosed. The flange includes a surface for juxtaposition with a mating flange and a leg extending away from the juncture of the structures to be joined in a direction generally normal to the mated surface of the flange, the leg including a nominally flat surface facing the axis of a bolthole provided in the flange and further including a recess located adjacent the juncture of the leg with the primary portion of the flange. The bolthead includes a flat located in juxtaposition with the nominally flat surface of the flange leg, a pin projecting from the flat into the recess and movably secured in the bolthead, and means constraining the pin to remain interposed in the recess.

3,597,111
BLADE MOUNT AND STALL CONTROL FOR VANE AXIAL COMPRESSORS
Robert E. Salisbury, Whittier, and John W. Erickson, Huntington Beach, both of, Calif., assignors to Preco, Inc., Los Angeles, Calif.
Filed July 18, 1969, Ser. No. 842,983
Int. Cl. F01d *5/30*
U.S. Cl. 416—206 6 Claims



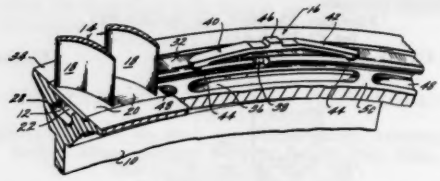
Radial compressor blades are adjustably and releasably mounted on the impeller hub. A set of rigid bayonet formations defines the blade axial position positively at all pitch angles. A set of flexible detent formations defines the pitch angle effectively positively during operation, but yieldably for manual adjustment between discrete values. A positive lock must be released for blade removal.

Especially at low pitch angles, the compressor is stabilized against stall by aperturing one or more blades.

3,597,112
COMPRESSOR-BLADE-RETAINING MEANS
Herbert Garten, Marblehead, Mass., assignor to General Electric Company
Filed Feb. 2, 1970, Ser. No. 7,579
Int. Cl. F01d *5/32*
U.S. Cl. 416—215 8 Claims

The application describes means for retaining individual bladed members in their circumferential position on a gas

turbine rotor spool. The invention comprises an elongated recess in the inner surface of a blade-root-retaining groove



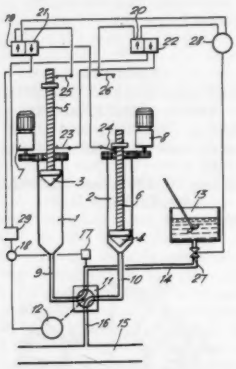
and a leaf spring disposed in the blind recess, which leaf spring includes a protuberance adapted to extend between the roots of two adjoining compressor blades.

3,597,113

PROCESS AND DEVICE FOR THE AUTOMATIC CONTINUOUS INJECTION OF AN ADJUVANT INTO A FLUID

Georges Dumoulin, Villefranche, and Lucien Manjot, Lyon, both of, France, assignors to Societe Rhodiaceta, Paris, France

Filed Jan. 23, 1969, Ser. No. 793,278
Claims priority, application France, Jan. 26, 1968, 137,629
Int. Cl. F04b *17/00*
U.S. Cl. 417—53 **15 Claims**



A process of and a device for the automatic continuous injection of an adjuvant into a fluid in which the adjuvant is injected into the fluid by means of a plurality of syringes of which at any one time at least one is feeding adjuvant to the fluid, the individual syringes being operated in alternating filling and discharge phases, and the pressure in each syringe at the end of the filling phase and before the discharge phase begins being equal to or greater than the pressure existing in the zone occupied by the said fluid. In the device a motor is provided for reciprocating the syringe pistons and a commutation device is provided for communicating each syringe orifice in turn and alternately to the fluid and to a source of adjuvant.

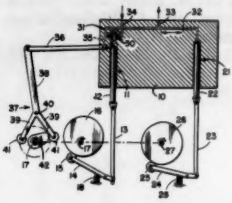
3,597,114

PUMP ASSEMBLY WITH UNIFORM OR PROGRAMMED DISCHARGE

Jiri Hrdina, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie veb, Prague, Czechoslovakia

Filed Jan. 29, 1969, Ser. No. 794,930
Claims priority, application Czechoslovakia, Jan. 30, 1968, PV 700-68
Int. Cl. F04b *3/00, 5/00, 25/10*
U.S. Cl. 417—265 **1 Claim**

A pump assembly comprises a principal or first cylinder with a uniformly reciprocating first piston and a suction line and a pressure or exit line governed by valve means at the end of each piston stroke, and auxiliary or second cylinder having at most one-half of the capacity of the first cylinder and a uniformly reciprocating second piston cooperating with a connecting line leading into said pressure line. The second piston reciprocates in phase with but adversely to the first



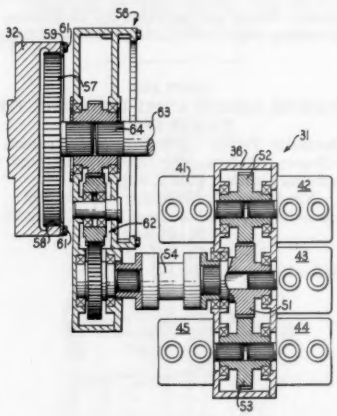
piston thus sucking a portion of liquid pressed by the first piston into the pressure line and on its return movement presses said liquidal portion into the common pressure line while the first piston sucks liquid into the first cylinder whereby a uniform or programmed movement of liquid in the pressure or exit line is insured.

3,597,115

HYDRAULIC PUMP MOUNTING ASSEMBLY

John E. Jass, Peoria; Frank A. Grooss, Morton, and Emil B. Lee, Jr., Morton, all of, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 19, 1969, Ser. No. 808,472
Int. Cl. F04b *9/00* **F04c** *29/04*
U.S. Cl. 417—313 **3 Claims**



A mounting and drive assembly for supporting a plurality of hydraulic pumps in a single location and including gearing through which the pumps may be operated by suitable motor means.

3,597,116

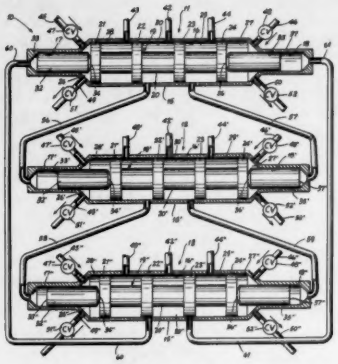
FLUID-POWERED PUMP

Ralph B. Tilney, Clayton, Mo., assignor to Alco Controls Corporation, St. Louis, Mo.

Filed Aug. 7, 1969, Ser. No. 848,148
Int. Cl. F04b *17/00*
U.S. Cl. 417—344 **5 Claims**

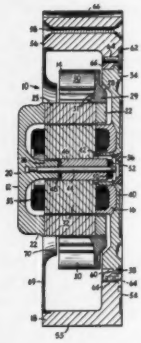
A fluid-powered pump comprising four-way slide valves with fluid conduits connecting the slide valves in a closed circuit. High- and low-pressure fluid connections to the fluid conduits to cause the slide valves to actuate one another in series in a continuously repeating cycle within the closed cir-

cuit. The slide valves may be used to pump other fluids from low-pressure supply areas to high-pressure use areas, such as



to pump liquid to the boiler in an absorption-type refrigeration system.

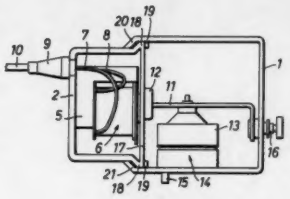
3,597,117
FAN FOR NARROW ENVIRONMENTS
Gunther Zoehfeld, West Hurley, N.Y., assignor to Rotorn Incorporated, Woodstock, N.Y.
Filed Jan. 10, 1969, Ser. No. 790,345
Int. Cl. F04b *17/00, 35/04, 39/06*
U.S. Cl. 417—354 **1 Claim**



A centrifugal fan for narrow environments is described wherein a stator is mounted to a backplate and is surrounded by a cup-shaped rotor carrying a suitable impeller on its outer periphery to provide a centrifugal output from an axial input. The resultant assembly has a small axial length with a high air delivery and can be substantially enclosed in a housing and mounted in a narrow space.

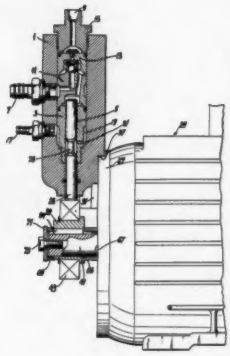
3,597,118
AQUARIUM PUMPS
Erwin Kolfertz, Turnerstrasse 22, Solingen-Merscheid, Germany
Filed Apr. 11, 1969, Ser. No. 815,403
Claims priority, application Germany, May 28, 1968, P 17 03 482.1
Int. Cl. F04b *17/00*
U.S. Cl. 417—360 **6 Claims**

An aquarium pump comprises a pump part and an electrical energizing coil, which operates the pump part, contained in a housing consisting of at least two separable housing parts. The pump part is mounted on one housing part and the energizing coil on the other housing part and they come into operative relationship with each other on assembling the housing parts together so that if either the pump part or the



coil fails they can be replaced individually by replacing the appropriate housing part.

3,597,119
SINGLE-CYLINDER ECCENTRIC ACTUATED PUMP
Jean Louis Gratzmuller, 66 Blvd. Maurice Barres, 92 Neuilly-sur-Seine, France
Filed July 23, 1969, Ser. No. 844,001
Claims priority, application France, July 25, 1968, Apr. 10, 1969, June 6, 1969, June 16, 1969, 160529; 69 11087; 69 18648; 19900
Int. Cl. F04b *17/00*
U.S. Cl. 417—360 **12 Claims**

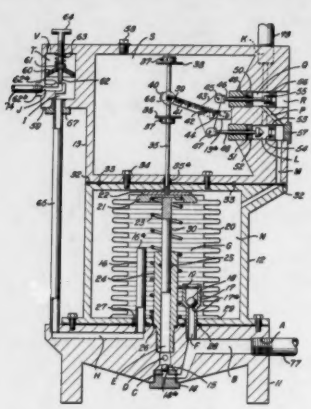


A pump-motor set comprising a reciprocating cylindrical pump for use with an electric motor having a cylindrical flange and a drive shaft projecting centrally of the flange. The pump has a body formed with a cylinder in which a piston slides to move fluid from an inlet to an outlet. The piston has a length such as to protrude from the bottom of the pump body and the latter is mounted directly on the flange of the motor. An eccentric is secured directly to the tip of the motor shaft so as to be in contact with the free end of the piston. Thus, rotation of the shaft causes reciprocation of the piston and operation of the pump.

3,597,120
INJECTOR-RECIRCULATION PUMP
John H. Reed, P.O. Box 321, Kermit, Tex.
Filed May 14, 1969, Ser. No. 824,503
Int. Cl. F04b *43/10, 45/00, 23/04*
U.S. Cl. 417—394 **4 Claims**

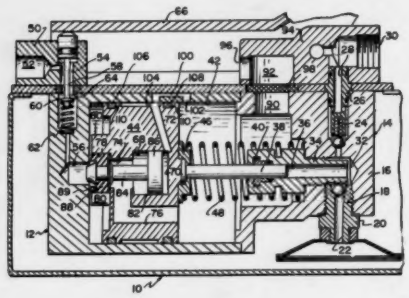
A reciprocating pump for delivering a metered amount of

fluid per stroke to a desired destination while recirculating the balance of the fluid drawn into the pump to the container



from which it is drawn, the pump being operated by a fairly constant, pressurized fluid source.

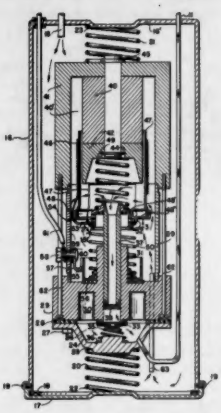
3,597,121
AIR-DRIVEN HYDRAULIC PUMP
Samuel B. McClocklin, Owatonna, Minn., assignor to Owatonna Tool Company
Filed Jan. 20, 1970, Ser. No. 4,271
Int. Cl. F04b *17/00;* **F01l** *21/02*
U.S. Cl. 417—400 **10 Claims**



A fluid-actuated hydraulic pump of the type having an air motor driving the pump. The air motor includes a reciprocal piston which is driven in one direction by fluid under pressure and is returned by a spring. A control valve is utilized to control the application of fluid under pressure to the piston and for venting the piston for the spring return. The control means for the control valve are arranged to trap a column of fluid behind a fluid pressure receiving surface of the control valve during the return of the piston by the spring to thereby positively hold the control valve in a position that will vent the piston to exhaust during return by the spring.

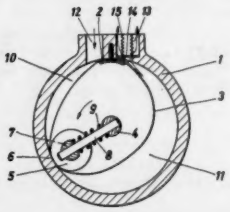
3,597,122
OSCILLATORY COMPRESSOR
Guy F. Farmer, 892 Vedado Way, N.E., Atlanta, Ga.
Filed Aug. 21, 1969, Ser. No. 851,806
Int. Cl. F04b *35/05*
U.S. Cl. 417—417 **11 Claims**

An oscillatory compressor having a high pressure chamber with a cylinder thereon and an open-ended tubular piston slidably mounted therein with a pressure responsive valve between the cylinder and the high-pressure chamber providing for passage of compressed fluid from said cylinder to said chamber when the fluid pressure in the cylinder exceeds a predetermined value, and closing the communication therebetween below the predetermined pressure. A pulsating drive for reciprocating the piston including a permanent magnet with poles spaced by an annular airgap and having a movable coil extending into the airgap and drivingly secured to the piston by a free-flow perforated mounting plate providing for unrestricted passage of fluid therethrough from space exterior to the coil and piston into space interiorly



thereof. Energization of the coil is provided through one of a pair of opposed springs supporting the piston and coil in a centered position and comprising a contact brush mounted to engage a conductive spring seat mounted on and insulated from the high pressure chamber. The entire assembly is encased in a sealed container with opposed springs resiliently supporting the compressor assembly therein, with a fluid supply inlet into the container from the fluid system, such as a cooling system and a compressed fluid exhaust or withdrawal outlet from the container extending to the high-pressure chamber of the compressor.

3,597,123
APPARATUS FOR FEEDING AND COMPRESSING GASES AND LIQUIDS
Otto P. Lutz, Bienroder Weg 53, 33 Braunschweig, Germany
Filed June 2, 1969, Ser. No. 829,261
Int. Cl. F04b *43/08, 43/12, 45/06*
U.S. Cl. 417—475 **5 Claims**



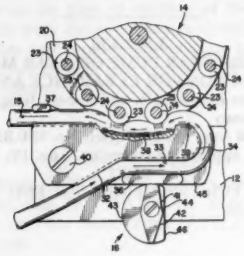
A pump having a cylindrical casing and carrying therewithin a tubular, multilayered strip attached along an axial surface line on the inner surface of the casing wherein the circumference of the strip is less than the inner circumference of the casing. Mounted therewithin for rotation and for urging the strip against the inside of the casing is a roller which is driven along a shaft mounted coaxially in the casing.

3,597,124

PERASTALTIC PUMP

Robert P. Adams, Walden, N.Y., assignor to Cenco Medical Health Supply Corporation, Chicago, Ill.

Filed Sept. 4, 1969, Ser. No. 855,214
Int. Cl. F04b *43/12*
U.S. Cl. 417—477 2 Claims



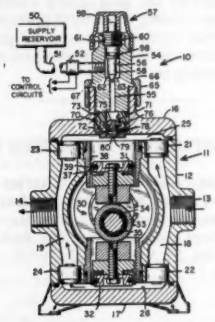
A perastaltic pump having a plurality of rollers mounted on a rotating pump wheel. Compressible tubing is supported by a tube support means which is manually operable to move the tubing into engagement with the rollers on the pumping wheel. Through the novel shape of the tubing support means, the tube may be easily installed and removed and functions to prevent tubing creep during operation.

3,597,125

LIQUID INJECTOR ASSEMBLY FOR PISTON PUMPS

Harry J. Sadler, St. Paul; Ramon Pareja, Minneapolis, and John Leschisin, Minneapolis, all of, Minn., assignors to Hypro, Inc., St. Paul, Minn.

Filed July 1, 1969, Ser. No. 838,195
Int. Cl. F04b *21/02, 41/00*
U.S. Cl. 417—503 6 Claims



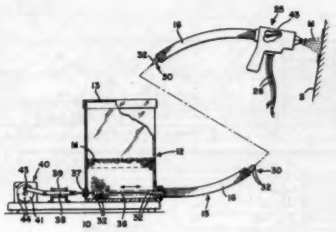
Induction means for use in combination with a positive displacement pump, the pump having a pumping chamber, a reciprocating piston disposed in a cylinder communicating with the chamber, along with inlet and outlet valves for intermittent isolation of the chamber during the pumping strokes, the induction means being arranged in communication with the pumping chamber and being adapted to induce fluid flow into the pumping chamber for discharge through the positive displacement pump structure, the induction means including induction inlet means for coupling the chamber to a supply reservoir, an adjustable control valve having a first orifice and an adjustable valve element cooperating with the orifice, poppet valve means disposed in a second orifice and in communication with the first orifice and arranged to open upon the suction stroke of the pump, and to close upon the pressure stroke, and an injection chamber means having a third orifice in direct communication with the pumping chamber and having baffle means interposed between the third orifice and the injection chamber.

3,597,126

FLEXIBLE TUBE CONVEYOR

Carl L. Brumbaugh, 108 Lowry Drive, West Milton, Ohio

Filed May 13, 1969, Ser. No. 824,150
Int. Cl. F04b *39/10, 43/00*
U.S. Cl. 417—555 8 Claims



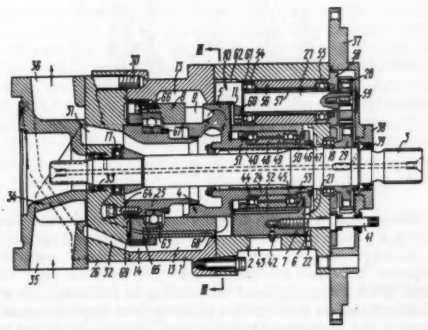
Flocking material is conveyed from a supply container to a portable electrostatic applicator through a flexible tube in which is reciprocated an elongated flexible impeller. The impeller includes a series of semispherical propelling elements mounted on a longitudinally extending flexible rod.

3,597,127

ROTARY-TYPE HYDRAULIC MACHINE

Alexandr Ivanovich Kravtsov, ulitsa Engelsa obschezhite IGR, Komnata 28, Ljudinovo, Kaluzhskoi, Oblasti; Viktor Viktorovich Domogatsky, ulitsa Molodezhnaya 6, kv. 60, Ljudinovo, Kaluzhskoi, Oblasti; Sergei Kazimirovich Rushat, ulitsa Semashko, 5, kv. 6, Ljudinovo, Kaluzhskoi, Oblasti; Pavel Nikitovich Mazurov, ulitsa Lenina, 16/9, kv. 6, Ljudinovo, Kaluzhskoi, Oblasti; Vasily Petrovich Kopantsov, ulitsa Vostochnaya, 26-a, kv. 44, Kremenchug; Vladimir Grigorievich Lavrukhin, ulitsa Lenina, 7 kv. 12, Ljudinovo, Kaluzhskoi, Oblasti; Viktor Vladimirovich Gordeev, ulitsa Lenina, 3, kv. 24, Ljudinovo, Kaluzhskoi, Oblasti, and Eedor Anpalievich Dimitriev, ulitsa Kosmonavtov, b, kv. 8, Moscow, all of, U.S.S.R.

Filed Aug. 15, 1969, Ser. No. 850,565
Int. Cl. F01c *21/16*
U.S. Cl. 418—20 15 Claims

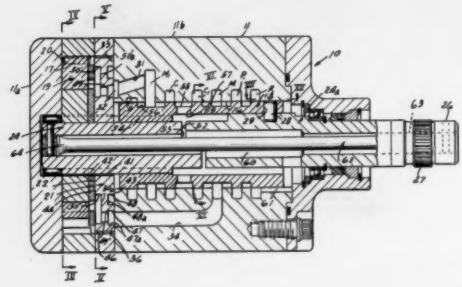


The present invention relates, preferably, the transport machinery, and more particularly it relates to the rotary-type hydraulic machines, used, particularly, in power transmissions of locomotives, tractors, tracks, transport vehicles as well as in the drives of machine tools and other machines.

3,597,128
HYDRAULIC DEVICE HAVING HYDRAULICALLY BALANCED COMMUTATION

Fredrick D. Venable, and Raymon L. Goff, both of Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 10, 1969, Ser. No. 815,161
Int. Cl. F01c *1/02*
U.S. Cl. 418—61 **16 Claims**

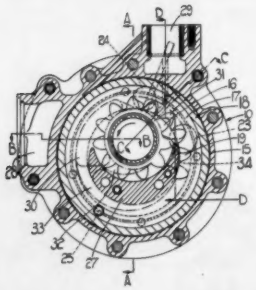


A hydraulic device including a pair of hypocycloidal gear members arranged for relative rotational and orbital movement to provide alternately expanding and contracting pockets between the teeth thereof and a commutator valve associated with said gear members for directing fluid into and out of said pockets in timed relation with the movement of said gear members. The commutator valve is constructed and arranged so as to be balanced hydraulically in an axial direction by virtue of the pressure of the fluid acting thereon.

3,597,129
INTERNAL GEAR PUMPS AND MOTORS

Harold Crowther, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 9, 1969, Ser. No. 840,338
Claims priority, application Great Britain, July 19, 1968, 34497/68
Int. Cl. F04c *27/00;* **F01c** *1/10;* **F04c** *17/06*
U.S. Cl. 418—126 **7 Claims**

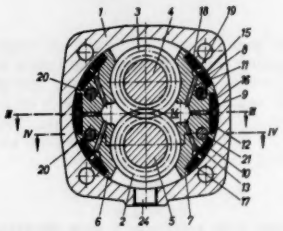


The invention relates to internal gear pumps and motors having a pinion meshed with an internal gear and rotatable in a housing, and in which a crescent-shaped member is disposed between the pinion and the internal gear where these are not interengaged. According to the invention a pair of sideplates are arranged to press against opposite axial end faces of the piston and internal gear, one of the plates being fixed and the other movable by hydraulic pressure. The crescent-shaped member is secured relative to the fixed sideplate and is slidable in the other sideplate. A pair of apertures in each sideplate communicate respectively with high- and low-pressure ports in the housing. A sealing element between the crescent-shaped member and the movable sideplate extends over at least that portion of the crescent-shaped member which is adjacent to the aperture connected to the high-pressure port. The sideplates may each be formed with a pair of grooves which extend around opposite sides of the crescent-shaped member from the aperture connected to the low-pressure port. Where such grooves are present the sealing element extends only as far as the ends of grooves, since fluid in these is at low pressure. The sealing element is conveniently carried in a recess in the crescent-shaped member. A sealing element may also be fitted between the crescent-shaped member and the sideplate.

3,597,130
HIGH-PRESSURE GEAR PUMP OR GEAR MOTOR WITH COMPENSATION FOR CLEARANCE AND WEAR

Otto Eckerle, Am Bergwald 3, and Robert Jung, both of 7502 Malsch, Germany

Filed Aug. 18, 1969, Ser. No. 850,857
Claims priority, application Germany, Aug. 19, 1968, P 17 28 050.1
Int. Cl. F01c *19/02;* **F04c** *27/00;* **F01c** *19/08*
U.S. Cl. 418—126 **5 Claims**

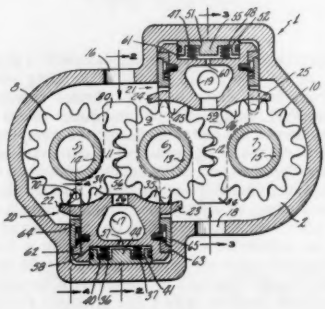


A high-pressure gear pump or gear motor with compensation for clearance and wear, where clearance takeup means enclose the pressure side of the gears both radially and axially and where they are connected by pins. While the pressure compensating means push the takeup means radially against the gears, this pressure is born simultaneously by the gear peripheries and by the gear shafts which are in contact with the face plates forming the lateral portions of the takeup means. Simultaneous contact is assured by providing a small initial clearance between the face plates and shafts which disappears during running in.

3,597,131
GEAR PUMP WITH TRAVEL LIMITED TIED WEAR BLOCK

John J. Schofield, Glastonbury; Charles W. Grennan, Newington, and Le Roy A. Difford, Sinsbury, all of, Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

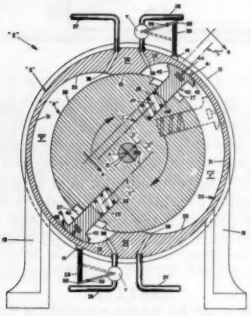
Filed Sept. 24, 1969, Ser. No. 860,667
Int. Cl. F01c *19/02, 19/08*
U.S. Cl. 418—126 **7 Claims**



A three-gear pump for pumping nonabrasive fluids having a center gear and two outer gears intermeshing with the center gear. Two pivotable and movable peripheral tooth-

sealing members having respective arcuate wiping surfaces engage each of the outer gears and the center gear. The sealing members are positioned adjacent the outlets of the pump. The sealing members are capable of only limited movement toward the gears due to respective stop elements integral with the pump housing and respective contact elements integral with the sealing members adapted to engage the stop elements. The sealing members are also pivotable about an axis transverse to the axes of rotation of the gears. As the sealing members wear due to contact with the gear teeth, the contact elements will respectively advance toward the stop elements until they contact one another to transmit the load on the sealing members to the housing.

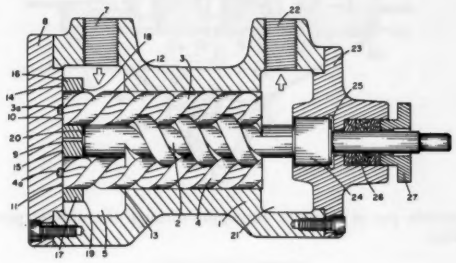
3,597,132
ROTARY ENGINE
Bernhardt Stahmer, 1509 Chicago, Omaha, Nebr.
Filed Aug. 29, 1969, Ser. No. 854,230
Int. Cl. F01c *19/00;* **F04c** *17/00, 27/00*
U.S. Cl. 418—144 **10 Claims**



A fluid-driven rotary engine comprising a rotor forwardly rotatable about a central axis and a lobed stator defining an elongated forwardly extending arcuate fluid chamber therebetween which has a fluid inlet port adjacent the stator lobe and a fluid outlet port remotely forwardly of the inlet port. The rotor carries a resiliently depressible vanelike piston that extends from the rotor wall across the fluid chamber, the piston head portion sliding along the stator-wall including at the preferably arcuate apex of the stator lobe, the vanelike piston being resiliently depressible along a cavity axis that is decidedly nonradial with respect to the rotor central axis to ensure slidable contact of the piston along the entire stator wall. There are means to introduce steam or other fluid into the fluid chamber through the inlet port during brief intervals when the vanelike piston is forwardly passing the inlet port.

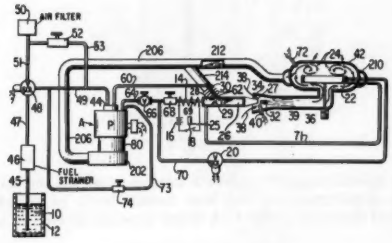
3,597,133
SCREW PUMP WITH THRUST ABSORBER
Josef Zeitvogel, and Siegfried Gehli, both of Radolfzell, Germany, assignors to Allweiler AG, Radolfzell, Germany
Filed Jan. 12, 1970, Ser. No. 2,045
Claims priority, application Germany, Jan. 15, 1969, P 19 01 759.5
Int. Cl. F01c *1/16*
U.S. Cl. 418—203 **5 Claims**

A screw pump having a driving rotor and two driven idler screws, each of which is composed of helical passages which are disposed in intermeshing relationship. Within the suction chamber a collar is mounted upon each driven screw for bearing contact relationship with the housing and simultaneously for interposition between the driving rotor and the



housing to counteract or absorb the axial thrust developed by the driven screws and the rotor.

3,597,134
LIQUID FUEL BURNING APPARATUS
Frank W. Bailey, 663 Black Oak Ridge Road, Wayne, N.J.
Filed Jan. 23, 1969, Ser. No. 793,350
Int. Cl. F23d *11/44*
U.S. Cl. 431—211 **2 Claims**

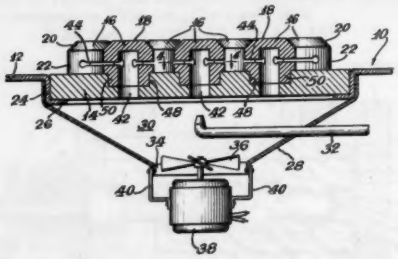


Liquid fuel burning apparatus in which air that is free of fuel is preheated to a temperature above that at which a substantial quantity of the liquid fuel vaporizes, and then the heated air is turbulently and violently mixed with the fuel to break up the fuel mechanically and thermally into finely divided fuel particles in the hot air. To stabilize this mixture to retard agglomeration of the finely divided fuel particles it is abruptly cooled by quenching it by introducing a cooling medium such as atmospheric air to produce a stable aerosol type suspension suitable for flowing through a pipe to a distant gas-type burner to be burned in such burner.

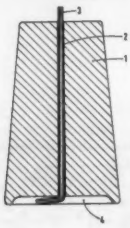
3,597,135
GAS BURNER STRUCTURE
Esher R. Kweller, Downers Grove; Robert B. Rosenberg, Evergreen Park, and Jaroslaw Batorfalvy, Chicago, all of, Ill., assignors to Institute of Gas Technology
Filed Apr. 30, 1969, Ser. No. 820,449
Int. Cl. F23q *7/06*
U.S. Cl. 431—258 **7 Claims**

A gas burner for a gas range top. The structure includes a plate portion which is mounted on the range top and a plurality of upright portions which are mounted on the plate portion. A chamber is located below the plate portion. Passageways extend from the chamber and pass outwardly through the upright portions. Means are provided for in-

troducing a combustible gas into the chamber and through the passageways. Means are provided for igniting the combustible gas as it passes outwardly through the upright portions.

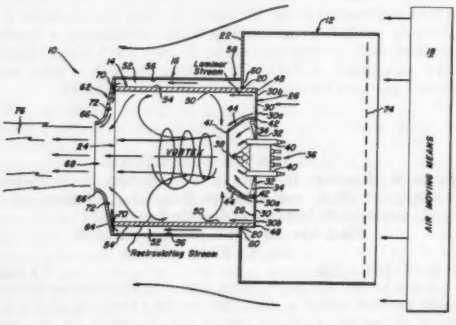


3,597,136
CANDLE
Kurt Mundt, Treuchtlingen, Germany, assignor to Wilhelm Vollmar Bonner Wachsbleiche und Wachswarenfabrik, Duisdorf, Germany
Filed Oct. 21, 1968, Ser. No. 769,133
Claims priority, application Germany, Oct. 20, 1967, P 16 29 853.6
Int. Cl. F23d *3/16*
U.S. Cl. 431—290 **5 Claims**



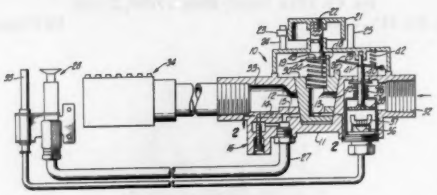
The specification describes a candle in which the wick is axially displaceable in the wax candle body to adjust the length of that part of the wick which extends above the wax.

3,597,137
CROP-DRYING OIL BURNER
Donald C. Walker, Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.
Filed Sept. 8, 1969, Ser. No. 855,861
Int. Cl. F23d *15/00*
U.S. Cl. 431—351 **12 Claims**



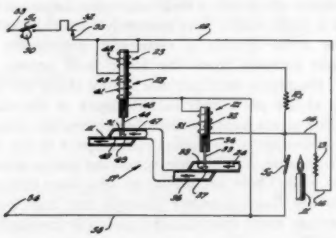
Disclosed is a crop-drying oil burner particularly adapted to be used outdoors when ambient temperatures are below about 45° F. This burner includes an inner cylindrical combustion chamber, and a concentric outer air chamber spaced from the inner chamber and including a spaced front plate which covers the open front end of the inner chamber. This front plate has a circular orifice therein which allows flame to shoot out of the inner chamber. High-velocity air is blown through the inner chamber and through the gap between the inner and outer chambers, sweeping across the front plates' inside surface, keeping it free of carbon.

3,597,138
FUEL-BURNING APPARATUS
William A. Ray, North Hollywood, Calif., assignor to International Telephone and Telegraph Corp., New York, N.Y.
Filed Apr. 3, 1970, Ser. No. 25,439
Int. Cl. F23q *9/12*
U.S. Cl. 431—54 **4 Claims**



The invention includes an auxiliary pilot valve for use in a household gas heater control. The auxiliary pilot valve flow is maintained on when the control is turned toward an irreversible safety lock position. A reduced pilot light is produced by the auxiliary flow. The reduced pilot light is small and fails to heat a thermocouple to a high temperature. A safety magnet valve connected from the thermocouple then closes off all gas entry to the control after thermocouple cools.

3,597,139
DUAL COIL GAS BURNER CONTROL CIRCUIT
Alvin J. Elders, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed July 9, 1969, Ser. No. 840,440
Int. Cl. F23n *5/00*
U.S. Cl. 431—66 **8 Claims**

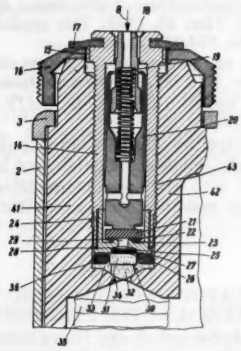


A fuel control and ignition system for a gaseous fuel burning apparatus such as a clothes dryer which uses an igniter and includes two gas valves in series in the gas fuel line to the burner. Both of the gas valves must be turned on before the burner can ignite. The first valve is controlled by a pair of coils in circuit with the timing switch and thermostat one coil of which is in circuit with a temperature responsive switch and the second valve is controlled by a coil in circuit with the timing switch and thermostat and also the igniter element. The temperature responsive switch is connected in parallel with the coil of the second valve to bypass it until the temperature sensitive switch opens in response to the igniter and burner to allow the second valve to be actuated.

3,597,140
GAS LIGHTER

Peter Rabe, Muhlheim am Main, Germany, assignor to Heinrich Maltner GmbH, Offenbach am Main, Germany

Filed July 9, 1969, Ser. No. 840,350
Claims priority, application Germany, July 17, 1968, P 17 82 087.0
Int. Cl. F23q *2/08*
U.S. Cl. 431—131 **7 Claims**



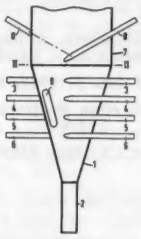
A fuel tank contains liquified gaseous fuel. A burner unit has an inlet and an outlet, the inlet being arranged to receive fuel from the tank. Igniting means serves to ignite fuel issuing in gaseous state from the outlet whereby the burner unit is heated by the resulting flame. Vaporizing means is interposed between and communicates with the fuel tank and the inlet to receive from the former fuel in liquid state and to supply it to the inlet in gaseous state. The vaporizing means defines a plurality of elongated fuel paths each of which is at least in part bounded by an inner heat-exchanging surface which is in heat-exchanging relationship with the burner unit.

3,597,141
BURNER DEVICE FOR FLUIDIC FUELS

Aribert Fracke, Erlangen, and Eduard Weber, Nurnberg, both of, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Aug. 5, 1969, Ser. No. 847,642
Claims priority, application Germany, Aug. 7, 1968, P 17 51 839.7
Int. Cl. F23c *5/18*
U.S. Cl. 431—173 **10 Claims**

A burner device for gaseous, liquid or pulverulent fuel comprises a tubular burner structure of a rotationally symmetrical, for example conical or parabolic shape, which tapers from the burner outlet opening toward the much smaller fuel inlet opening. Nozzles for supplying combustion air communicate with the interior of the tapering burner structure in substantially tangential directions respectively and in a plurality of respective planes which extend transversely to the burner axis and are axially spaced from each other. Preferably a cylindrical combustion chamber structure is coaxially joined with the tubular burner structure at the outlet opening of the latter and is provided with additional combustion-air supply nozzles which are directed tangentially

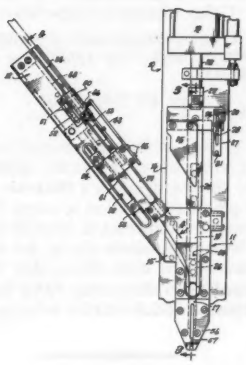


toward the interior of the combustion chamber. Roughness structures are preferably mounted on the interior wall of the tapering burner structure and may be adjustable as to the height up to which they protrude into the interior of the burner.

3,597,142
AUTOMATIC NAILING MACHINE

Lane Jasper, 165 North Catalina Avenue, Pasadena, Calif.

Filed Aug. 4, 1969, Ser. No. 847,173
Int. Cl. B27f *1/12*
U.S. Cl. 227—95 **14 Claims**



The structure of the present invention incorporates a fixture for holding a pair of wood component parts positioned for joining under a nail-driving ram. A continuous strip of nails feeds nails to a position under the ram which then drives a single nail into the two parts to form a mitertight locking connection.

CHEMICAL

3,597,143

FIBER DYEING WITH A SULFURIC ACID ESTER OF LEUCO VAT DYESTUFF AND AN ALKALI METAL NITRITE

Joseph Van Diest, Binningen, Switzerland, assignor to Durand & Huguenin A.G., Basel, Switzerland

No Drawing. Filed Jan. 5, 1968, Ser. No. 695,870

Claims priority, application Switzerland, Jan. 5, 1967, 117/67

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 12 Claims

Textile fabric, including fabric of mixed cellulose fibers and polyester fibers, are dyed with superior results by means of salt of sulfuric acid ester of leuco vat dye by treating (e.g. padding or printing) the fibrous material with an aqueous preparation which comprises salt of sulfuric acid ester of leuco vat dye and alkali metal nitrite, but is free from acids and acid-yielding compounds, and then developing and fixing the thus-treated fabric by so-called thermo-fixation.

3,597,144

PROCESS FOR CONTINUOUSLY DYEING WOOL FIBERS WITH MORDANT BLACK 11 AND TREATING WITH SODIUM NITRITE

John A. Leddy, Hawthorne, N.Y., assignor to Geigy Chemical Corporation

No Drawing. Continuation-in-part of application Ser. No. 584,684, Oct. 6, 1966. This application Oct. 13, 1969, Ser. No. 866,037

Int. Cl. D06p *5/02*

U.S. Cl. 8—74 11 Claims

A process for the continuous dyeing of polyamide fibers comprising applying to said fibers an aqueous solution of a non-cationic chrome dyestuff, a thickener, acid sufficient to adjust the pH of the solution to about 2 to about 5, a trivalent chromium compound, a dyestuff carrier in which the dyestuff is soluble, steam fixing the dyestuff on the fibers and washing the dyed fibers, that is improved by treating the dyed fibers after steam fixing but before washing with an aqueous sodium nitrite solution.

3,597,145

TREATMENT OF A CELLULOSIC-CONTAINING TEXTILE WITH A FLUOROCARBON, AN AMINOPLAST, AND A SYNTHETIC ACID COPOLYMER, AND TEXTILE OBTAINED THEREFROM

Francis W. Marco, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

No Drawing. Filed Mar. 10, 1967, Ser. No. 622,086

The portion of the term of the patent subsequent to Apr. 9, 1985, has been disclaimed

Int. Cl. D06m *13/08, 13/10, 13/34*

U.S. Cl. 8—115.6 16 Claims

A process for imparting oil and water repellency, soil release, and durable press characteristics to a cellulosic-containing textile material and product produced by this process, comprising applying thereto an aminoplast textile resin, a textile resin catalyst, a fluorocarbon, and a synthetic acid copolymer, and curing at a temperature of 100–200° C.

3,597,146

FILMS AND FIBERS HAVING MODIFIED ION AFFINITY AND HYDROPHILICITY PRODUCED THROUGH REACTION OF SUCH SUBSTRATES WITH POLYOXYALKYLENE POLYAZIRIDINES

Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 183,050, Mar. 28, 1962. This application Feb. 25, 1969, Ser. No. 804,361

The portion of the term of the patent subsequent to Jan. 12, 1982, has been disclaimed

Int. Cl. D06m *13/48, 13/18*

U.S. Cl. 8—115.7 19 Claims

Antistatic properties can be imparted to synthetic hydrophobic materials, cellulosic materials, and blends of cellulosic materials with synthetic, hydrophobic materials by contacting said materials with a selected polyaziridine compound.

3,597,147

MODIFICATION OF CELLULOSIC TEXTILE MATERIALS WITH PYRIMIDONES

Heinz Bille, Limburgerhof, and Harro Petersen, Frankenthal, Germany, and Martin W. Schwemmer, Urdorf, and Hans Bors, Fallanden, Switzerland, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 21, 1969, Ser. No. 868,221

Claims priority, application Germany, Oct. 24, 1968, P 18 04 806.1

Int. Cl. C07d *51/18;* D06m *13/40, 13/52*

U.S. Cl. 8—116.3 4 Claims

The use of N^1-monohydroxymethyl and N^1-monoalkoxymethyl derivatives of 5,5-dialkylhexahydropyrimidones which bear an alkyl group in the N^3-position and a hydroxyl or alkoxyl group in the 4-position as finishing agents for textile material consisting of or containing natural or regenerated cellulose.

3,597,148

REPROCESSING OF TEXTILE MATERIAL

Clifford C. Carroll and William H. Stewart, Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

No Drawing. Filed Nov. 4, 1968, Ser. No. 773,277

Int. Cl. D01f

U.S. Cl. 8—137.5 11 Claims

A process for removing a vinyl polymer from textile material which comprises subpecting the textile material to irradiation and subjecting the irradiated material to an alkaline solution.

3,597,149

INHIBITION OF GAS-FUME FADING OF DYED CELLULOSE ACETATE MATERIAL

Kyo Masuda, Suita-shi, and Shizuo Nishino and Yoshiaki Hasegawa, Kyoto, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, and Meisei Chemical Works, Co., Ltd., Kyoto, Japan

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,327

Int. Cl. D06p *5/02*

U.S. Cl. 8—165 10 Claims

A method of improving the color fastness of dyed cellulose acetate material with a specified bis(benzylamino) derivative as a gas-fume of fading inhibitor.

3,597,150
DYEABLE HIGH POLYMER BLEND
Charles Noil Brown, Columbia, S.C., and Andor Schwarcz, Pompton Lakes, N.J., assignors to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Feb. 14, 1968, Ser. No. 705,303
Int. Cl. D06p 5/00
U.S. Cl. 8—168 9 Claims

This invention relates to rendering shaped articles or fibers, which contain either a polyolefin or polyester and a minor amount of a pyridine base polymer, dyeable with anionic dyes by contacting such articles or fibers with an anionic surfactant prior to or during the dyeing procedure.

3,597,151
DYEING AND/OR PRINTING ACRYLONITRILE POLYMER TEXTILE MATERIAL
Hans Baumann, Ludwigshafen (Rhine), Hans-Richard Mueller, Fussgoenheim, Palatinate, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed June 4, 1968, Ser. No. 734,224
Claims priority, application Germany, June 13, 1967, P 16 19 369.4
Int. Cl. D06p 3/70
U.S. Cl. 8—177 4 Claims

A method of dyeing, printing or otherwise coloring acrylonitrile polymers or polyvinylidene dicyanides in which there is added the polymer to be colored a basic dye containing a flavylium cation. The basic dye can be incorporated directly into a solution of the polymer or can be applied to the polymer under conventional conditions for dyeing or printing textile materials with basic dyes.

3,597,152
DE-WATERING OF METAL SURFACES
Richard Elliott Shaw, Windsor, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Continuation of abandoned application Ser. No. 462,108, June 7, 1965. This application July 1, 1969, Ser. No. 841,687
Claims priority, application Great Britain, June 10, 1964, 24,085/64
Int. Cl. C23f 15/00
U.S. Cl. 21—217 6 Claims

Metallic surfaces are de-watered and at the same time given a protective coating of oil by treating the surfaces with a composition comprising an unstable emulsion in water of a non-volatile oil containing an oil-soluble surface active agent. Preferably the composition contains at least 50% by weight of water. Preferred proportions of surface active agent lie in the range from 1% to 10% by weight of the oil. Optionally, the oil may also contain a corrosion inhibitor, preferably in a proportion of up to 20% by weight.

3,597,153
RECOVERY OF VANADIUM FROM MAGNETITE
Milton G. M. Atmore, Johannesburg, Transvaal, Republic of South Africa, Ewen T. Pinkney, Avondale, Salisbury, Southern Rhodesia, and Alan L. Guise-Brown, Johannesburg, Transvaal, Republic of South Africa, assignors to Anglo American Corporation of South Africa Limited
Continuation-in-part of application Ser. No. 596,318, Nov. 22, 1966. This application July 30, 1969, Ser. No. 858,555
Int. Cl. C22b 59/00; C01g 31/00
U.S. Cl. 23—16 3 Claims

A method of extracting vanadium from vanadiferous iron ores with reduced kiln ringing-up, comprising comminuting the ore, adding less than 3% by weight of the total mix of sodium sulfate and less than 3% by weight of the total mix of at least one of the substances selected from the group consisting of sodium carbonate and sodium bicarbonate, passing the mix into an inclined kiln at the upper end of the kiln, wherein the kiln is equipped with a burner at the lower end thereof, raising the temperature in the kiln to give a temperature gradient in the kiln such that the temperature at the lower outlet end varies from 1100 to 1300° C. and permitting the vanadium in the mix to react with at least one of the additives to yield a soluble vanadium compound in the product of the kiln.

3,597,154
RECOVERY AND PURIFICATION OF COPPER SULFATE
Harry W. Weber, Jr., Baltimore, Md., Carroll Jerome Wenzke, deceased, late of Peekskill, N.Y., by Winifred R. Wenzke, administratrix, Peekskill, N.Y., and Alice Laverne Hansen, Baltimore, Md., assignors to FMC Corporation, New York, N.Y.
Filed Sept. 20, 1968, Ser. No. 764,024
Int. Cl. C01g 3/10, 3/00, 3/02
U.S. Cl. 23—50 6 Claims

This application discloses a process for recovering cupric sulfate from solutions containing water soluble impurities such as sulfuric acid and sodium sulfate. The cupric sulfate is precipitated by an alkali metal hydroxide or alkaline earth metal hydroxide at a temperature above about 70° C. as dibasic copper sulfate $CuSO_4 \cdot 2Cu(OH)_2$. The dibasic copper sulfate precipitate is treated with a stoichiometric amount of sulfuric acid to regenerate cupric sulfate. The cupric sulfate is recovered by cooling the solution to precipitate crystalline cupric sulfate pentahydrate.

3,597,155
CRYSTALLINE MM AND PROCESS FOR MANUFACTURE THEREOF
Edith M. Flanigen, Buffalo, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Continuation of application Ser. No. 218,141, Aug. 20, 1962, which is a continuation-in-part of application Ser. No. 607,136, Jan. 3, 1967. This application Feb. 14, 1969, Ser. No. 799,485
Int. Cl. C01b 33/28
U.S. Cl. 23—111 4 Claims

A crystalline zeolite having the mordenite crystal structure is treated with an aqueous mineral acid solution to increase the molar SiO_2/Al_2O_3 ratio and the apparent pore diameter while retaining the characteristic crystal structure of the starting material. The product is referred to as "crystalline MM."

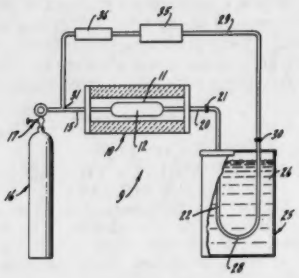
3,597,156
DESTRUCTION OF AMMONIUM SALTS IN STRONG HYDROCHLORIC ACID SOLUTIONS
Leon E. Solomon, Sarnia, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed June 4, 1969, Ser. No. 830,528
Int. Cl. C01b 7/08, 24/00
U.S. Cl. 23—154 6 Claims

A process for reducing the concentration of ammonium chloride in hydrochloric acid comprising dissolving chlorine in the aqueous solution.

3,597,157
DIRECT REDUCTION OF METALLIC OXIDES IN DYNAMIC HYDROGEN ATMOSPHERE
Jerome J. Kanter, Palos Park, Ill., assignor to Crane Co., Chicago, Ill.
Filed Apr. 17, 1968, Ser. No. 722,033
Int. Cl. C01b 6/06; C01f 5/04
U.S. Cl. 23—204R 8 Claims

Process for reducing oxides of metallic elements from Group III and IV of the Periodic Table by reaction with

magnesium in a dynamic hydrogen atmosphere. Magnesium oxide formed during the reaction is carried away

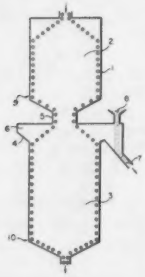


from the reaction zone in the hydrogen gas flow and deposited at a remote location.

3,597,158
METHOD OF MAKING DIAMONDS
Marvin Duane Horton, Provo, Utah, assignor to Megadiamond Corporation
No Drawing. Filed Jan. 13, 1969, Ser. No. 790,866
Int. Cl. C01b *31/06*
U.S. Cl. 23—209.1 **1 Claim**

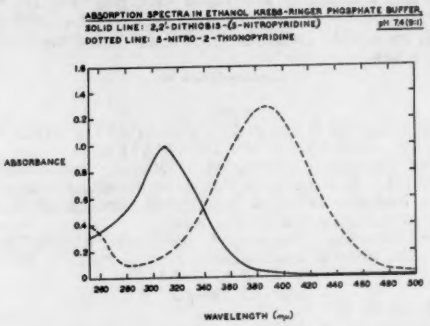
Synthetic diamonds are made by mixing a carbonaceous material with an alloy consisting of about 95% nickel and 5% beryllium or 45–96% nickel and 55–4% zirconium, and heating the mixture at a pressure of 50,000–60,000 atmospheres to a temperature of 1200–1350° C.

3,597,159
METHOD OF PREVENTING BLOCKING OF GAS OUTLETS
Kelichi Nakaya, Yasuo Osanai, and Shiro Fukui, Ichihara-shi, and Isami Takakura, Chiba-shi, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan
Filed Feb. 3, 1969, Ser. No. 796,106
Claims priority, application Japan, Feb. 12, 1968, 43/8,363
Int. Cl. C01b *7/02;* **C01g** *49/10;* **B01d** *53/02*
U.S. Cl. 23—219 **5 Claims**



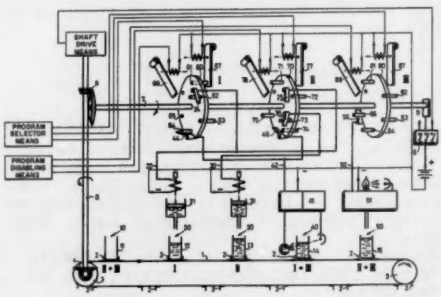
Iron chloride-containing reaction masses are oxidized with an oxygen-containing gas at high temperatures to liberate a chlorine-containing gas which is contacted and quenched with a moving cold granular material at a product gas outlet, whereby the gasified iron chloride in said gas is condensed onto said granular material and, simultaneously, the iron chloride deposit at the gas outlet is scraped away by the abrasion of said granular material.

3,597,160
COLORIMETRIC METHOD FOR DETERMINING THIOLS
Davide R. Grassetti, Berkeley, Calif., assignor to Arequipa Foundation, San Francisco, Calif.
Filed Apr. 2, 1969, Ser. No. 812,839
Int. Cl. C07d *31/48;* **G01n** *31/22*
U.S. Cl. 23—230R **6 Claims**



Method of analysis of principal utility in determining the presence of thiols in various samples by selective visualization in thin-layer or paper chromatography, or electrophoresis, but which also adapts itself, when working with organic solutions, to the use of spectrophotometographic or simple colorimetric devices. The process is one wherein the reagent chemical 2,2'-dithiobis-(5-nitropyridine) reacts rapidly and irreversibly with the thiol compound to form a thione derivative of the reagent chemical and a disulfide of the thiol compound. The resulting thione manifests a characterizing spectrum having absorption at useful wavelengths, from an analytical standpoint, in both the ultraviolet and the visual ranges.

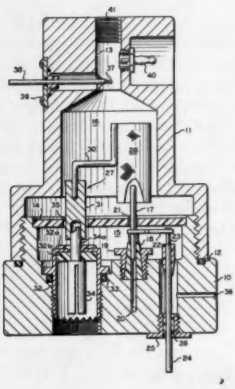
3,597,161
SAMPLE ANALYZING APPARATUS
Rudolf Greiner, Langenthal, Switzerland, assignor to Greiner Electronic AG, Langenthal, Switzerland
Filed Aug. 11, 1969, Ser. No. 848,852
Claims priority, application Switzerland, Dec. 18, 1968, 18,853/68
Int. Cl. G01n *1/00, 1/10*
U.S. Cl. 23—253R **10 Claims**



Apparatus for chemically and/or physically analyzing a sample of a given material, such as a liquid, contained in a receptacle, characterized by the provision of a series of analyzing stations each including normally de-energized electrically operable analyzing means, conveyor means for

transporting said receptacle in succession past said stations, respectively, and program establishing means for energizing predetermined ones of said analyzing means during the transport of the receptacle thereby in accordance with a given analyzing program. The program establishing means includes a memory device operable in synchronism with the conveyor means, program input means for storing command instructions in said memory device in accordance with the desired analyzing steps of said program, detector means for sensing the command instructions, and circuit means responsive to the detected command signals for operating the selected analyzing means. In the preferred embodiment, the memory means includes a rotor disk that carries operating pin means that are axially shiftable between passive and active positions relative to said detector means.

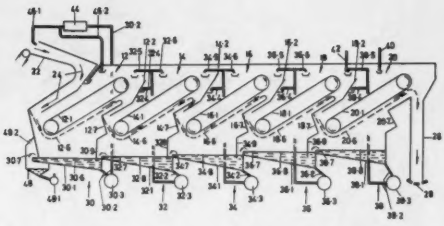
3,597,162
GAS ANALYZER
Marvin E. Reinecke, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Apr. 21, 1969, Ser. No. 817,665
Int. Cl. G01n *31/12*
U.S. Cl. 23—254 **6 Claims**



A gas analyzer in which an elongated gas-tight housing is separated into a base compartment and an electrode compartment by a shield. A support and a burner tip extend through the shield into the electrode compartment, the support carrying a collector electrode mounted coaxially with the burner tip. Air under pressure is admitted to the base compartment and passes through concentric openings in the shield surrounding the burner tip and support, thereby preventing column effluents and products of combustion from coating the electrical insulators, thus providing long trouble-free service. The electrical insulators are disposed within the base compartment.

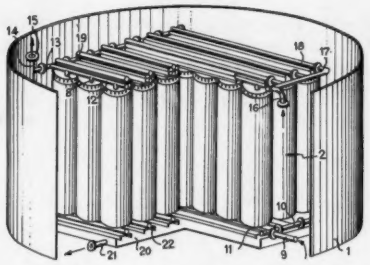
3,597,163
SOLVENT EXTRACTION APPARATUS
Anthonie van Hengel, Westville, Natal, Republic of South Africa, assignor to Hulett's Sugar Corporation Limited, Durban, Natal, Republic of South Africa
Filed Oct. 21, 1969, Ser. No. 868,178
Claims priority, application Republic of South Africa, Oct. 21, 1968, 68/6,802
Int. Cl. B01d *11/02*; C13d *1/02*
U.S. Cl. 23—270 **3 Claims**

A solvent extraction apparatus in which sub-divided solids are moved through at least two extraction stages, extracting liquid being circulated independently in each stage, and the extraction liquid being moved from stage



to stage countercurrent relative to the movement of the solids.

3,597,164
PROCESS AND APPARATUS FOR THE PURIFICATION OF CRYSTALLIZABLE ORGANIC COMPOUNDS
Claude Ab-Der-Halden, Nancy, France, assignor to Proabd S.A., Nancy, France
Filed Sept. 3, 1968, Ser. No. 756,919
Claims priority, application France, Sept. 5, 1967, 119,942; Nov. 29, 1967, 130,114
Int. Cl. B01d *9/04*
U.S. Cl. 23—273F **9 Claims**

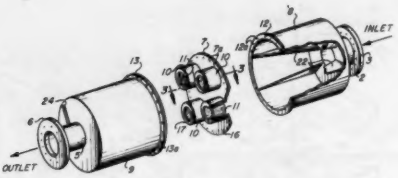


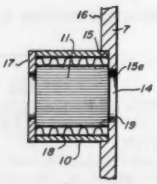
A process and method for purifying a crystallizable organic compound in the liquid state in a vessel. The process comprises introducing the compound in at least one vessel, solidifying said compound by cooling and then heating it slowly so as to melt the impurities which drain from the remaining product, the latter being progressively purified and collected when it reaches the desired purity. The feature of the invention is that the cooling and heating of said compound to be purified are carried out by causing a heat exchange fluid to flow on the outer wall of said vessel containing said compound, said vessel having for this purpose a large heat transfer surface.

3,597,165
CATALYTIC EXHAUST PURIFIER
Carl D. Keith, Summit, John J. Mooney, Wyckoff, and Kenneth W. Blamble, Murray Hill, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Newark, N.J.
Filed June 18, 1969, Ser. No. 834,376
Int. Cl. B01j *9/04*; F01n *3/14*
U.S. Cl. 23—288F **2 Claims**

A catalytic purifier for the treatment of internal combustion engine exhausts, designed to eliminate external manifolding to separately housed catalyst bodies, has a

catalyst support plate equipped for housing a plurality of ceramic catalyst blocks. It is particularly useful for purifying exhausts of large displacement engines, e.g., those exceeding 400 in.³/cycle.

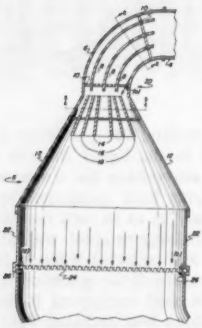




3,597,166
AMMONIA BURNER FLOW DISTRIBUTOR

Jack M. Hochman, Boonton, N.J., assignor to Esso Research and Engineering Company

Filed Dec. 18, 1968, Ser. No. 784,846
Int. Cl. B01j 9/04; C01b 21/28
U.S. Cl. 23—288 4 Claims

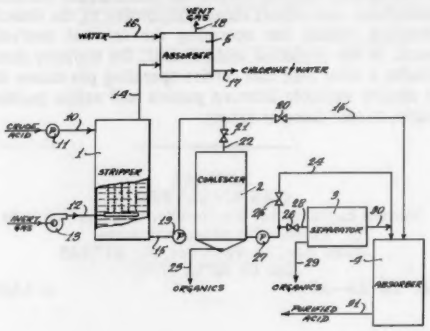


Uniform flow to an ammonia burner gauze catalyst is achieved by providing a series of turning vanes and a series of truncated cone guide vanes in communication with the turning vanes. The guide vanes are designed such that the length to diameter ratio of the vanes is small enough so that flow separation is minimized. To alleviate the effects of any small amount of flow separation which may occur in the turning vanes, and guide vanes are positioned so that they are slightly off-center with respect to the turning vanes. The use of the device of the instant invention leads to improved overall ammonia burner efficiency and to the substantial reduction of undesirable side reactions.

3,597,167
REMOVAL OF CHLORINE AND ORGANIC IMPURITIES FROM HYDROCHLORIC ACID

Daniel R. Marks and Charles R. Hanson, Memphis, Tenn., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Mar. 29, 1968, Ser. No. 717,140
Int. Cl. B01d 15/00; C01b 7/08
U.S. Cl. 23—306 13 Claims



A continous process for the purification of hydrochloric acid contaminated with both chlorine and organic material which comprises charging a stream of the contaminated acid to a stripping zone, simultaneously charging a stream of inert gas to the stripping zone and into contact therein with the contaminated acid to effect the desorptive removal of substantially all of the chlorine contained in the acid, passing the stripped acid effluent from the stripping zone to an adsorption zone and contacting it therein with a solid adsorbent to effect the adsorptive removal of the organic material from the stripped acid, and recovering the acid effluent from the adsorption zone with a substantially reduced quantity of both chlorine and organic material.

3,597,168
RECOVERY OF LARGE GRAINS OF Na_2SO_4 AND $(NH_4)_2SO_4$ FROM AQUEOUS METHANOL SOLUTIONS

Hans Hoppe, Gunter Döring, Wolfgang Ulrich, Heinz Scherzberg, and Klaus Kaseberg, Sondershausen, Germany, assignors to VEB Kombinat Kali, Sondershausen, Germany

Filed Dec. 11, 1968, Ser. No. 782,868
Int. Cl. B01d 9/02
U.S. Cl. 23—300 3 Claims

Method of recovering a salt from a saturated aqueous solution thereof in which the aqueous salt solution, optionally containing organic precipitant, is mixed with a more concentrated solution of the organic precipitant and the differential between the organic precipitant concentration in the saturated salt solution and that in the solution mixed therewith is so selected that crystallization of the salt takes place entirely in the metastable range.

3,597,169
PROCESS FOR DEMETHANIZATION OF LIQUID OXYGEN

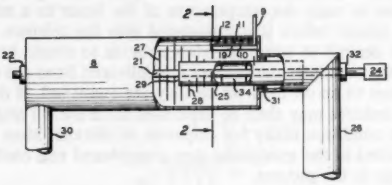
David W. Savage, Atlanta, Ga., assignor to Esso Research and Engineering Company

No Drawing. Filed Nov. 13, 1968, Ser. No. 775,513
Int. Cl. B01d 15/00
U.S. Cl. 23—312 6 Claims

The disclosure is directed to an improved process for the removal of methane from a mixture of methane and oxygen by the use of an X-type zeolite catalyst. The use

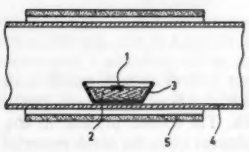
of silver and calcium cation-exchanged forms of synthetic X zeolites result in a much higher capacity for methane removal than was heretofore possible under the prior art.

3,597,170
PELLETIZING OF CARBON BLACK DIRECTLY FROM SMOKE
Robert E. Dollinger, Phillips, Tex., assignor to Phillips Petroleum Company
Filed Sept. 9, 1968, Ser. No. 758,510
Int. Cl. B01j 2/12
U.S. Cl. 23—314 10 Claims



A process for producing carbon black pellets in which the smoke from the reactor flows to the pelleter where it is quenched to form a carbon black composition suitable for pelleting, the gases being separated from the carbon black within the pelleter.

3,597,171
METHOD OF CRYSTALLIZATION USING SOLVENT REMOVAL BY REACTION
Wilhelmus Franciscus Knippenberg and Gerrit Verspui, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 19, 1967, Ser. No. 676,511
Claims priority, application Netherlands, Oct. 22, 1966, 6614999
Int. Cl. B01j 17/04
U.S. Cl. 23—301SP 6 Claims



A method of manufacturing crystals of semiconductor materials in which a seed crystal is brought into contact with a molten saturated solution of the semiconductor material while a gas is supplied to the atmosphere above the solution which reacts with solvent at the temperature of the melt to form a volatile compound so that the solvent is extracted from the surface layer and a state of over-saturation is caused in this layer.

3,597,172
ALLOYS HAVING AN ALUMINUM-DIFFUSED SURFACE LAYER
Karl Bungardt, Krefeld, Gottfried Becker, Dusseldorf, and Günter Lehnert, Krefeld, Germany, assignors to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany
Filed Jan. 29, 1968, Ser. No. 701,317
Claims priority, application Germany, Jan. 31, 1967, D 52,148
Int. Cl. B32b 15/00
U.S. Cl. 29—194 4 Claims

It is known to protect the surface of alloys with a layer of diffused aluminum. It has now been found that the oxidative resistance of certain alloys, namely high temperature steels, nickel based and cobalt based alloys, is improved if the aluminum layer is diffused onto a substrate of nickel.

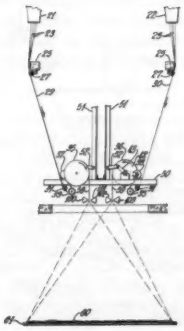
3,597,173
OXIDATIVE TREATMENT OF PETROLEUM DISTILLATE FUELS CONTAINING OLEFINIC UNSATURATED COMPONENTS
Thomas J. Wallace, Elizabeth, N.J., and Norman Friedman, Cleveland, Ohio, assignors to Esso Research and Engineering Company
No Drawing. Filed Jan. 3, 1966, Ser. No. 517,908
Int. Cl. C10l 1/22
U.S. Cl. 44—64 2 Claims

Petroleum distillate fuels containing olefins and dissolved molecular oxygen are treated with from 0.1 to 1.0 wt. percent of at least one arylhydrazone, preferably the arylhydrazone of a cyclo aliphatic saturated hydrocarbon ketone, after which both the insoluble and soluble gums are separated from the so treated fuels.

3,597,174
FUEL FOR INTERNAL COMBUSTION ENGINES
Henry E. Alquist and Edward R. Morrison, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed July 3, 1968, Ser. No. 742,137
Int. Cl. C10l 1/22
U.S. Cl. 44—74 6 Claims

Addition of guanidine petroleum sulfonate to hydrocarbon fuels results in an improved fuel composition having reduced tendency to produce carbon deposits when utilized in the operation of an internal combustion engine.

3,597,175
METHOD FOR FORMING UNIFORM BODIES FROM GLASS FIBERS
Richard E. Pitt, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Continuation of application Ser. No. 559,459, June 22, 1966. This application Oct. 27, 1969, Ser. No. 869,941
Int. Cl. C03c 25/02
U.S. Cl. 65—3 6 Claims

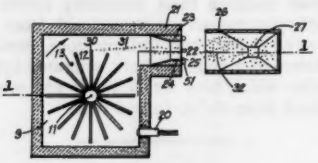


A fibrous body of continuous strands uniformly distributed with respect to each other, the strands having the filaments dispersed in the deposited position of the strand. The body is formed of strands composed of only enough filaments to give each strand sufficient mass to be projected to a predetermined or selected area of a collecting surface at a body forming station. The filaments of each strand are then dispersed after the strand is in place on the collection surface.

3,597,176
METHOD AND APPARATUS FOR MANUFACTURING BEADS

Emile Plumat, Gilly, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium

Continuation-in-part of abandoned application Ser. No. 443,419, Mar. 29, 1965. This application Mar. 7, 1968, Ser. No. 716,688
Claims priority, application Luxembourg, Apr. 21, 1964, 45,925
The portion of the term of the patent subsequent to Mar. 10, 1987, has been disclaimed
Int. Cl. C03b *19/10*
U.S. Cl. 65—21 21 Claims

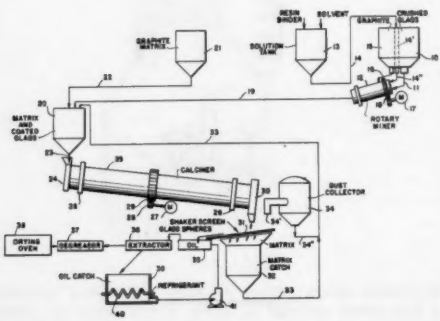


A method and apparatus for producing grains by cutting a thread of molten material with the projecting arms of a rotating member, permitting the molten material segments to spread out and flow outwardly along the arms and to be expelled from the ends of the arms under the influence of centrifugal forces so as to be dispersed into particles, maintaining the material at a temperature above its melting point as it moves along the arms and eventually substantially above its melting point as it travels through space after being expelled therefrom for permitting the particles to spherulize, cooling the particles to solidify them, and collecting the resulting solidified grains.

3,597,177
METHOD OF PRODUCING GLASS BEADS

Charles Davidoff, Manhasset, N.Y., assignor to Potters Bros., Inc., Carlstadt, N.J.

Filed July 19, 1968, Ser. No. 746,133
Int. Cl. C03b *19/10*
U.S. Cl. 65—21 19 Claims

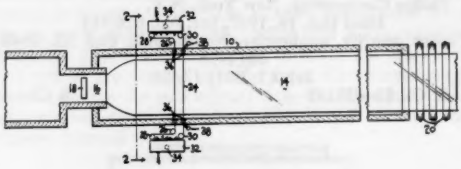


A method of producing glass spheres or beads from crushed glass. The method involves applying a resin binder to the surfaces of the glass particles and then applying a coating of a finely divided susbtance, such as graphite. The thus coated particles are dried and are intermixed with a matrix which has approximately the same specific gravity as the glass and is present in about the same quantity by weight. The intermixture of coated glass and matrix is then subjected to externally applied heat while the mixture is being conveyed through an elongated rotary calciner. The calciner is effective to raise the mixture to a temperature which preferably is below the ignition point of the matrix but above the softening point of the glass. The mixture is maintained at the selected temperature for a sufficient period of time to cause the glass to soften to such an extent that its surface tension, aided by the rolling motion of the calciner, converts the particles into spherical form. After such spheroidization of the glass has been achieved, the mixture is discharged onto a shaker screen of suitable mesh, adapted to retain the glass spheres on its upper surface but to permit the matrix to pass through its openings into a catch basin. This enables reuse of the matrix with another quantity of coated glass, and it serves to raise the temperature of the latter to a substantial extent before it is introduced into the calciner. When it is desired to stress the glass spheres to obtain beads of greater strength, the spheres are delivered from the shaker screen to an oil bath where they are quenched. If desired, the spheres may then be separated from the oil and dried to a condition ready for shipment or storage. Most of the oil used in the quenching step is recovered and cooled for reuse in the process.

3,597,178
PROCESS AND APPARATUS FOR REMOVING ATMOSPHERIC CONTAMINANTS IN A FLOAT GLASS OPERATION

Robert L. Tilton, Wexford, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 17, 1969, Ser. No. 817,015
Int. Cl. C03b *18/02*
U.S. Cl. 65—27 8 Claims



A continuous belt of a wire mesh material is moved across the width of a float bath from locations outside the float glass bath. Tin sulfide present in the float bath atmosphere condenses onto the mesh material and is carried outside the bath where cooling of the belt occurs. The cooled belt is vibrated outside the bath to remove the condensed tin sulfide particles.

3,597,179
GLASS TREATMENT AND GLASS-CERAMIC ARTICLE THEREFROM

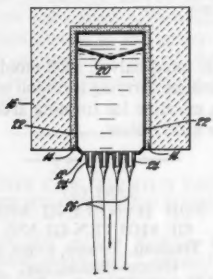
George A. Simmons, Toledo, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Filed Mar. 30, 1967, Ser. No. 626,940
Int. Cl. C03c *21/00*
U.S. Cl. 65—30 13 Claims

A process of treating an article of glass to provide a glass-ceramic having a high flexural strength which comprises heat treating an article of glass at elevated temperatures, including a nucleation temperature and a subsequent higher temperature that is a maximum of 1650° F. for periods of time sufficient to provide a glass-ceramic article with a compressive layer, followed by a treatment of the article of glass-ceramic with an ion-exchange medium containing a salt of an alkali metal other than lithium at an elevated temperature of at least 200° C. and for a period of time to exchange alkali metal ions of the salt with lithium ions in the glass-ceramic surface,

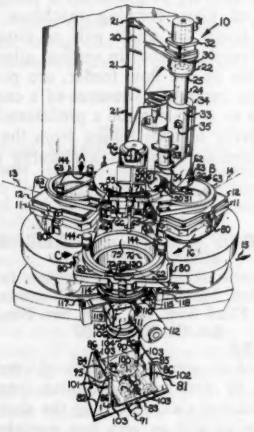
with the elevated temperature being below that at which the compressive stress created by the ion-exchange is relieved, and the article of glass-ceramic resulting from said process.

3,597,180
INSULATING LAYER FOR BUSHING SUPPORTING SYSTEM
Thomas D. Erickson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Aug. 14, 1968, Ser. No. 752,601
Int. Cl. C03b *37/00, 29/00*
U.S. Cl. 65—33 **4 Claims**



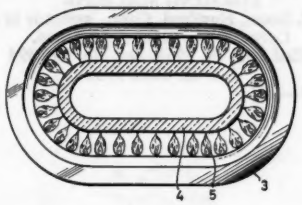
A platinum bushing from which glass fibers are attenuated is supported by a cast ceramic body with an insulating layer therebetween. The insulating layer consists essentially of highly refractory fibers of silica and alumina to which additional alumina is supplied so that when the bushing is heated to an elevated temperature, in excess of 2800° F., the fibrous insulating layer transforms to mullite and is free of any glass. Such an insulating layer has a much longer life than those heretofore employed and does not react with the cast ceramic supporting body as has heretofore occurred.

3,597,181
METHOD AND APPARATUS FOR TRANSFER AND ORIENTING OF GLASS MAKING MOLDS
John R. Prendergast, Columbus, Ohio, assignor to Owens-Illinois, Inc.
Filed Aug. 21, 1968, Ser. No. 754,318
Int. Cl. C03b *9/18*
U.S. Cl. 65—71 **11 Claims**



An apparatus for transferring and orienting the ring portion of a glass forming mold. An apparatus with a mechanism for disengaging the top ring of a glass article forming mold and translating it to an orienting station. An orienting station capable of rotating the disengaged top mold ring. Mechanism associated with the apparatus for translating the oriented mold ring from the orienting station to a mold. A method of orienting the top ring section of a glass forming mold by grasping the mold ring, disengaging it from the mold, translating the mold ring to an orienting station, orienting the mold ring and returning it to a mold at a location different from the initial pick-up location.

3,597,182
METHOD OF MAKING SMALL GLASS CAPS HAVING A NON-CIRCULAR CROSS SECTION
Otmar Vinz, Landshut, Germany, assignor to JENAer Glaswerk Schott & Gen., Mainz, Germany
Continuation-in-part of application Ser. No. 582,713, Sept. 28, 1966. This application Nov. 17, 1969, Ser. No. 877,527
Claims priority, application Germany, Oct. 28, 1965, J 29,273
Int. Cl. C03b *21/00*
U.S. Cl. 65—102 **3 Claims**



A method of producing glass caps of non-circular cross-section by first forming a glass tube of the desired non-circular cross-section and then heating a restricted peripheral zone of said glass tube, while the same is non-rotatably supported, by flames from a plurality of nozzles of a stationary burner substantially surrounding said glass tube at said peripheral zone, said nozzles being so dimensioned and so arranged to produce equal heating conditions along said entire non-circular peripheral zone, whereby upon removal of the lowermost superfluous material from the glass tube a bottom is formed on the cap.

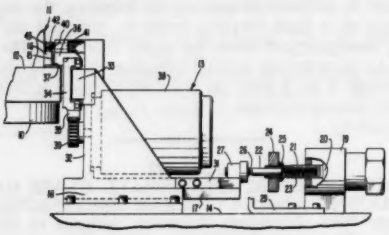
3,597,183
TRIFLUOROMETHANE-ETHANE AZEOTROPIC COMPOSITION
Kevin P. Murphy, Bernardsville, and Sabatino R. Orfeo, Morris Plains, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed May 15, 1967, Ser. No. 638,420
Int. Cl. F25b *15/00*; C09k *3/06*
U.S. Cl. 62—114 **3 Claims**

A low boiling azeotropic mixture, and equivalent mixtures, consisting of tirfluoromethane and ethane, useful as refrigerants.

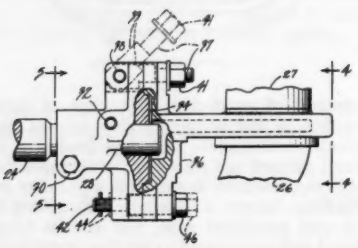
3,597,184
REED SWITCH GAPPING MECHANISM
Edward L. Pityo, Cedar Grove, N.J., assignor to Federal Tool Engineering Co., Cedar Grove, N.J.
Filed Jan. 2, 1969, Ser. No. 788,565
The portion of the term of the patent subsequent to Aug. 12, 1986, has been disclaimed
Int. Cl. C03b *27/02, 29/00*
U.S. Cl. 65—154 **6 Claims**

A mechanism for consistently establishing with great accuracy the gap between the reed elements of magnetic

reed switches as the switches are manufactured step-by-step by an indexable turret apparatus carrying plural sealing heads. The gapping mechanism compensates automatically for thermal expansion or contraction of the turret and associated elements.



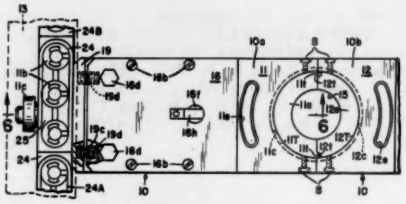
3,597,185
SCOOP HOLDER FOR GLASSWARE FORMING MACHINE
Thomas C. Jones, Hartford, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Feb. 19, 1968, Ser. No. 706,394
Int. Cl. C03b 5/34
U.S. Cl. 65—172 2 Claims



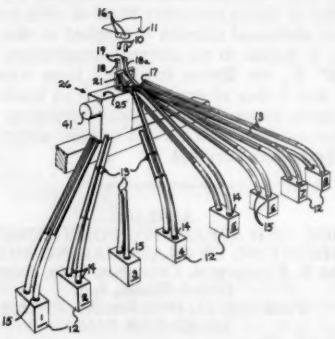
A retractable scoop for each individual section of a glassware forming machine is removably mounted on a flanged fitting at the end of a reciprocable piston rod. The fitting has a swing bolt and threaded screw or stud, both of which are received in slots in a scoop holder which carries the scoop itself. The swing bolt carries a nut and the screw can be threaded into the fitting so that both cooperate to releasably clamp the scoop holder to the piston rod.

3,597,186
NECK RING MOLD MECHANISM
Mijo A. Gossie and Roy N. Sundstrom, Corning, William R. Wisner, Big Flats, and Edward J. Zak, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Apr. 4, 1969, Ser. No. 813,664
Int. Cl. C03b 9/00
U.S. Cl. 65—240 9 Claims

An axially separable neck ring mold mechanism or orifice plate comprising a pair of complemental and cooperative axially separable male and female neck ring mold halves, and an identical holder and support assembly for each mold half, each holder being resiliently horizontally mounted within the support of the respective assembly for optimum linear alignment of such holders and their associated mold halves with each other, each of the assemblies including a set of rollers or wheels by which such assemblies can, for example be moved along associated sets of first and second sets of rails or tracks which extend parallel with each other on opposite sides of a selected path of travel for said mold halves, such mold halves and their associated assemblies carrying a ribbon of molten glass in a glass working machine for forming articles such as containers from the glass ribbon.



3,597,187
APPARATUS FOR HANDLING MOLD CHARGES OF MOLTEN GLASS
Urban P. Trudeau, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Nov. 9, 1967, Ser. No. 681,651
Int. Cl. C03b 5/32
U.S. Cl. 65—304 9 Claims



The sequential delivery of plural mold charges or gobs to a plurality of glass forming machines positioned beneath a flow feeder. A single pair of scoops, having their upper, gob-receiving ends in vertical alignment with the double orifices of the flow feeder, are pivoted horizontally under the mechanical control of a cam operated drive mechanism so as to provide a predetermined, timed sequence of delivery of gobs falling from the orifices to the gob guides and deflectors of a plurality of forming machines.

3,597,188
METHOD OF MAKING HIGH DENSITY IRON POWDER
Nathan Neumann, Ridgway, Pa., assignor to Domtar Limited, Montreal, Quebec, Canada
No Drawing. Filed Aug. 23, 1968, Ser. No. 754,991
Int. Cl. B22c 9/00
U.S. Cl. 75—.5BA 4 Claims

Iron powder of an apparent density of over 3.0 gms./cc. is produced by first shotting molten iron to obtain substantially spherical shot, screening the shot to remove oversize particles as well as very fine particles, sintering the shot in the presence of a decarbonizing agent, grinding the sintered material and again screening to remove particles above a certain size.

3,597,189

PROCESS FOR THE BENEFICIATION OF TITANIFEROUS ORES

Hari Narayan Sinha, Surrey Hills, Victoria, and David McBride Waugh, Gladstone, Queensland, Australia, assignors to Commonwealth Scientific and Industrial Research Organization and Murphyores Incorporated Pty. Ltd., Brisbane, Queensland, Australia

Filed Apr. 22, 1968, Ser. No. 723,008
Claims priority, application Australia, May 1, 1967, 21,087/67
Int. Cl. C22b *1/00*
U.S. Cl. 75—1 19 Claims

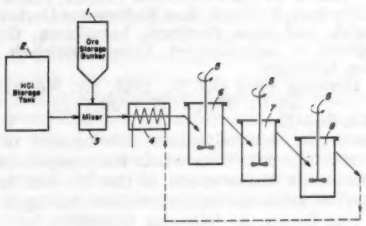
Process for the beneficiation of titaniferous ores wherein the natural ore is oxidized to convert substantially all of the iron values present to the ferric state and the oxidized ore is then deoxidized to convert substantially all of the iron values therein to the ferrous state and the product in which substantially all of the iron values therein are in the ferrous state containing not more than 20% of the metallic iron.

3,597,190

PROCESS FOR THE CONTINUOUS DIGESTION OF TITANIUM ORE BY MEANS OF HYDROCHLORIC ACID

Helmut Grohmann and Achim Kulling, Opladen, and Helmut Steinhausen, Odenthal, Germany, assignors to Titangesellschaft m.b.H., Leverkusen, Germany

Filed Apr. 14, 1969, Ser. No. 815,921
Claims priority, application Germany, May 11, 1968, P 17 67 449.6
Int. Cl. C01g *23/04*
U.S. Cl. 75—1 8 Claims



The invention is concerned with a co-current process for the continuous digestion of titanium ores, especially ilmenite ores, using concentrated hydrochloric acid at elevated temperatures and at atmospheric pressure.

3,597,191

PROCESS FOR MAKING HIGH QUALITY STEELS

Günter Altland, Lendringsen, Kreis Iserlohn, Germany, assignor to Gesellschaft fur Hullenwerksanlagen m.b.H., Dusseldorf, and Eisenwerk Rodinghausen, Lendringsen, Kreis Iserlohn, Germany

No Drawing. Filed Nov. 13, 1967, Ser. No. 682,554
Claims priority, application Germany, Nov. 29, 1966, G 48,585
Int. Cl. C21c *5/00*
U.S. Cl. 75—46 2 Claims

High quality steel is made by reducing the sulphur and nitrogen contents of a molten charge of iron in an agitator ladle, then refining the melt in an acid process side-blow Bessemer converter and simultaneously agitating the melt in the converter preferably by applying an alternating magnetic field. The quality of the steel then produced approaches that of steel made by the more expensive oxygen blow process.

3,597,192

PREPARATION OF TANTALUM METAL

Harley A. Wilhelm, Frederick A. Schmidt, and Roger M. Bergman, Ames, Iowa, assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Dec. 5, 1968, Ser. No. 781,583
Int. Cl. C22b *51/00*
U.S. Cl. 75—84 5 Claims

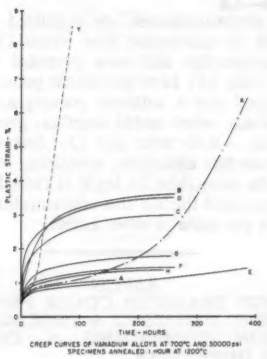
This invention relates to an improved method of preparing high-purity tantalum metal by the alumino-thermic reduction of Ta_2O_5. By adding selected alloying agents to the aluminum and tantalum oxide, a massive metal alloy readily separable from the slag is produced upon reduction of the mixture. The high-purity tantalum metal is then recovered by heating the alloy under reduced pressure to a temperature sufficient to boil off the alloying metals.

3,597,193

VANADIUM BASE ALLOY

William Pollack, Pittsburgh, and Richard T. Begley, Bridgeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 16, 1967, Ser. No. 623,697
Int. Cl. C22c *33/00*
U.S. Cl. 75—134 15 Claims



Solution and precipitation hardened vanadium-base alloys having excellent resistance to creep deformation at elevated temperatures and comprising, by weight, from about 1% to 4% zirconium, from 3% to 20% of at least one element selected from a group consisting of chromium, columbium, tungsten, molybdenum, titanium, iron, nickel, and tantalum, from 0.02 to 0.1% carbon, from 0.01% to 0.05% nitrogen, and oxygen in amounts not in excess of about 0.15%.

3,597,194

ALLOY FOR BRAZING POWDER

Ronald Savage, Harrow, Middlesex, England, assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed Aug. 13, 1969, Ser. No. 849,880
Claims priority, application Great Britain, Aug. 27, 1968, 40,890/68
Int. Cl. C22c *5/00, 19/00;* B23k *1/04*
U.S. Cl. 75—134N 8 Claims

Brazing alloy contains nickel, palladium and zirconium in proportions providing characteristics of crushability to powder form and good adhesion for brazing ceramics and metals.

3,597,195

HYDANTOIN-FORMALDEHYDE AS BINDER MATERIAL FOR PHOTOCONDUCTIVE SUBSTANCES

Karel Eugeen Verhille, Mortsel, and Luciaan Frans Voet, St. Katelijne-Waver, Belgium, assignors to Gevaert-Agfa N.V., Mortsel Morig, Belgium

No Drawing. Filed Feb. 27, 1968, Ser. No. 708,505
Claims priority, application Great Britain, Feb. 28, 1967, 9,522/67
Int. Cl. G03g 5/00, 7/00
U.S. Cl. 96—1.5 7 Claims

Electro-photographic recording material wherein the photoconductive substance, preferably photoconductive zinc oxide, is dispersed in a binder containing at least 60% by weight of a hydantoin-formaldehyde condensation polymer and characterized by rapid regain of its dark-resistivity so as to be specially adapted for rapid repetitive charging and exposure.

3,597,196

SENSITIZATION OF ORGANIC PHOTOCONDUCTORS WITH CYANINE MEROCYANINE, AND AZOCYANINE DYES

Jean E. Jones and Charles J. Fox, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 633,421, Apr. 25, 1967, and Ser. No. 716,000, Mar. 26, 1968. This application July 22, 1968, Ser. No. 746,256
Int. Cl. G03g 5/00, 7/00
U.S. Cl. 96—1.6 38 Claims

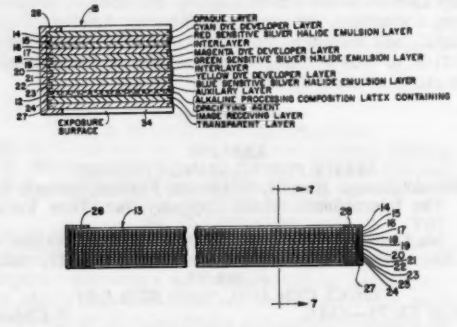
Organic photoconductors are sensitized with cyanine, merocyanine or azacyanine dyes which (1) have a cathodic polarographic half-wave potential more positive than −1.0 volt; (2) have an anodic polarographic half-wave potential and a cathodic polarographic half-wave potential which, when added together, give a sum more positive than −0.10 volt; and (3) desensitive negative silver bromoiodide emulsions, containing 99.35 mole percent bromide, more than 0.4 log E at radiation of 365 nm. when incorporated therein at a concentration of 0.2 millimole of dye per mole of silver halide.

3,597,197

DIFFUSION TRANSFER COLOR PROCESS AND ELEMENT UTILIZING A PROCESSING COMPOSITION COMPRISING A COALESCING LATEX DISPERSION

Terry W. Milligan, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 20, 1969, Ser. No. 867,626
Int. Cl. G03c 7/00, 5/54, 1/48
U.S. Cl. 96—3 44 Claims



The present invention relates to a composite photographic diffusion transfer process color film unit which includes rupturable container means retaining processing composition containing an insoluble polymeric dispersion adapted upon loss of processing composition solvent to coalesce at ambient temperatures for distribution between photosensitive and image receptive elements of the unit.

3,597,198

METHOD AND MATERIALS FOR MAKING COLOR PHOTOGRAPHS FROM COLOR POSITIVE PRINT STOCK

Gerald D. Sadick, Round Hill Lane, Sands Point, N.Y., and Edward Palmonka, 226 Fieldmere St., Elmont, N.Y. 11003

No Drawing. Filed May 2, 1968, Ser. No. 726,248
Int. Cl. G03c 7/02
U.S. Cl. 96—22 2 Claims

A method of developing color positive release stock is described to produce a color positive image. The development process makes it possible to expose the color positive release print stock in a camera directly to an illuminated subject, and then by subjecting the exposed color positive release print stock to the development process, a fixed color balanced color positive image results. The development process involves reducing the sensitivity to reaction of one layer containing metal halide to restrain development action in a reducer developer solution, while increasing the sensitivity to reaction of other layers containing metal halide to accelerate their development action in the reducer developer. A reducer developer containing metal halides to modify the speeds or sensitivity during development is described.

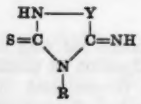
3,597,199

PROCESS FOR CONTROLLING THE DEVELOPMENT OF REVERSIBLE COLOR FILM

Hans Glockner, Pullbach, Karl Kuffner and Herbert Stark, Munich, and Hans Gotthard, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 31, 1969, Ser. No. 873,115
Int. Cl. G03c 5/59, 7/00, 7/16
U.S. Cl. 96—22 7 Claims

Process for controlling the development of multilayer reversible color film which has components incorporated therein characterized in that the first developer contains an aminomercapto derivative having 1 heterocyclic ring having the following formula:



wherein R is hydrogen or aryl and Y is an atom or atom grouping necessary to complete a 5 or 6 membered ring, or its corresponding tautomer.

3,597,200

COLOR DIFFUSION TRANSFER PROCESSES AND PRODUCTS UTILIZING METAL-COMPLEXED AZOMETHINE DYE-DEVELOPERS

Elbert M. Idelson, Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed June 4, 1969, Ser. No. 830,499
Int. Cl. G03c 5/54, 1/40; C07f 11/00
U.S. Cl. 96—29 13 Claims

Novel metal-complexed azomethine dyes which are also silver halide developing agents, novel non-complexed azomethines useful in the preparation of the same, and novel photographic systems and procedures employing the aforementioned metal complexes to obtain color images, particularly systems and procedures for preparing color images by diffusion transfer.

3,597,201
POSITIVE-WORKING PRESENSITIZED PLANOGRAPHIC PRINTING PLATE

Dorothy J. Beavers and William B. Kendall, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 3, 1967, Ser. No. 635,687
The portion of the term of the patent subsequent to Feb. 6, 1985, has been disclaimed
Int. Cl. G03f 7/02
U.S. Cl. 96—33 18 Claims

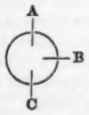
Positive-working presensitized printing plates comprising a support, a hardened gelatin photographic direct-positive covered grain emulsion and a polyhydroxybenzene developing agent. Optionally, a halogen-accepting compound and a sulfonated compound may be added to the emulsion to increase sensitivity.

3,597,202
PHOTO POLYMERIZATION PROCESS

Edward Cerwinka, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Nov. 4, 1968, Ser. No. 773,699
Int. Cl. G03c 1/68
U.S. Cl. 96—35.1 11 Claims

A process for photopolymerizing a normally liquid to normally solid monomer having the grouping $CH_2=C<$ which comprises subjecting the monomer to electromagnetic radiation so as to produce exposed and unexposed areas in the presence of a catalyst comprising a compound of the formula:



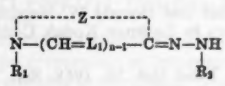
wherein A represents an oxo radical, B represents a diazo radical, C represents a sulfonic acid radical and the circle represents a ring system selected from the group consisting of cyclohexane, cyclohexene, cyclohexadiene, naphthalene, decahydronaphthalene, octahydronaphthalene and hexahydronaphthalene; thereafter contacting the exposed monomer with a reducing agent so as to polymerize the monomer in the exposed areas and subsequently removing the material from the unexposed areas so as to produce a colored negative image corresponding to the photopolymerized polymer.

3,597,203
PREPARATION OF PHOTOGRAPHIC COLOUR IMAGES

Jozef Frans Willems, Wilrijk, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed July 25, 1968, Ser. No. 747,432
Claims priority, application Great Britain, July 25, 1967, 34,011/67
Int. Cl. G03c 7/00, 1/76, 1/40
U.S. Cl. 96—56.5 7 Claims

Method and materials for forming color images in exposed silver halide emulsion layers by means of a color coupling compound of the formula



wherein:

R_1 represents an alkyl radical, an alkenyl radical, or an aryl radical,

Z represents the non-metallic atoms necessary to complete a 5- or 6-membered heterocyclic nucleus, or such nucleus making part of a fused heterocyclic system,

L_1 represents a methine group or nitrogen,

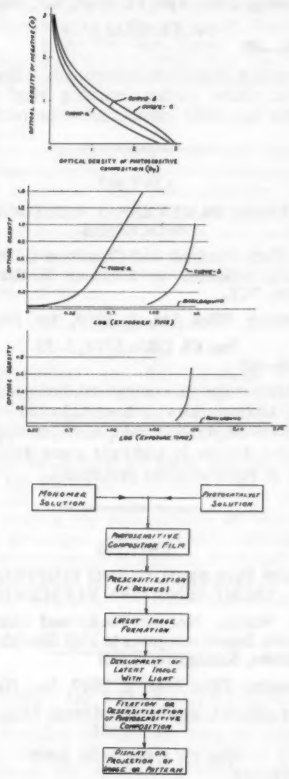
n is 1 or 2, and

R_2 represents an acyl group or a radical of the formula $—CONH_2$ or $—SO_2X$, wherein X represents hydroxyl, an amino radical, a heterocycloc radical, an alkyl radical, an alkoxy radical, an aryloxy radical, or an aryl radical, developed with a pyrazolidine-3-one having substituted at the 1-position thereof an aryl group free of substitutions at its p-position. Both of the color coupling compound and the developing agent defined above can be provided in a photographic material in effective contact with the silver halide of a light sensitive silver halide emulsion layer.

3,597,204
METHOD OF PROVIDING INDUCTION PHOTOGRAPHY AND PRODUCT

John B. Rust, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 3, 1966, Ser. No. 583,653
Int. Cl. G03c 5/00
U.S. Cl. 96—45.2 10 Claims


MONOMER SOLUTION
PHOTOCATALYST SOLUTION
PHOTOSENSITIVE COMPOSITION FILM
POLARIZATION (IF DESIRED)
LATENT IMAGE FORMATION
DEVELOPMENT OF LATENT IMAGE WITH LIGHT
FIXATION OR DESENSITIZATION OF PHOTOSENSITIVE COMPOSITION
DISPLAY OR PROJECTION OF IMAGE OR PICTURE

Improvement in the method of utilizing the induction period of photopolymer chemistry and improving the photographic speed of photopolymerizable compositions by the production of latent imaging in the induction period and effecting polymerization thereof in the photopolymerizable composition.

3,597,205

IMAGE REPRODUCTION WITH MERCUROUS HALIDE

Gordon N. Flannagan, Fair Haven, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 2, 1967, Ser. No. 679,983

Int. Cl. G03c 5/38

U.S. Cl. 96—48 2 Claims

A process for preparing a light-sensitive element by precipitating mercurous iodide substantially free of mercuric ions from stoichiometric amounts of mercurous nitrate in a nitric acid solution and potassium iodide, conditioning the resulting mercurous iodide and coating it on a support. The precipitation occurs in the presence of aqueous polyvinyl alcohol or inert gelatin.

3,597,206

PHOTOGRAPHIC BINDER OF VINYL POLYMER OF ANTHRANILATE UNITS

Joseph S. Yudelson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 22, 1968, Ser. No. 723,278

Int. Cl. G03c 5/24

U.S. Cl. 96—48 16 Claims

Light-sensitive palladium compounds when carried in a polymeric binder having recurring vinyl anthranilate units exhibit improved photographic properties.

3,597,207

DISULFIDES IN REVERSAL PHOTOGRAPHIC PROCESSES

Arthur D. Kuh, Penfield, and Charleton C. Bard, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,355

Int. Cl. G03c 5/24, 5/50

U.S. Cl. 96—65 26 Claims

Stable early-stage processing solutions, e.g., prebaths, containing bis(loweralkylcarbonamidophenyl) disulfides, e.g., bis[o-(N-ethyl)acetamidophenyl]disulfide, promote desirable dye density in highlight areas during color development in reversal color processing.

3,597,208

PROCESS FOR PRODUCING PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENTS

Fumihiko Nishio, Nobuo Tsuji, and Azusa Ohashi, Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan

No Drawing. Filed Mar. 8, 1967, Ser. No. 621,422

Claims priority, application Japan, Mar. 9, 1966, 41/14,485

Int. Cl. G03c 1/76, 3/00

U.S. Cl. 96—67 10 Claims

The susceptivity of the surface of a photographic light sensitive element to humidity can be decreased and the adhesion of the photographic light sensitive element to itself or to other surfaces can be completely prevented by applying to the surface of the photographic light sensitive element an organic solvent solution containing at least one member selected from the group consisting of a styrene-maleic anhydride copolymer, a partial half-ester copolymer thereof, and complete half-ester copolymer thereof and drying it.

3,597,209

PROCESS FOR PREPARING SILVER HALIDE EMULSIONS COMPRISING THE ADDITION OF EXCESS CHLORIDE ION

Robert Chapman Countryman, Pittsford, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 25, 1968, Ser. No. 700,358

Int. Cl. G03c 1/02, 1/28

U.S. Cl. 96—94 8 Claims

Radiation-sensitive emulsions and elements particularly suitable for use in high intensity oscillographs are prepared by adding to a colloid-silver halide emulsion of the developing-out type or direct-writing type, a large amount of a water soluble chloride salt of the order of about 160 mole percent based on the silver halides after digestion and prior to coating the emulsion on a support.

3,597,210

DIRECT WRITING SILVER HALIDE EMULSIONS CONTAINING DITHIOCARBAMATES

John Howard Bigelow, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 23, 1968, Ser. No. 707,409

Int. Cl. G03c 1/02

U.S. Cl. 96—94 8 Claims

Light-developable, direct-writing emulsions are prepared by precipitating the silver halide grains in the presence of a lead ion and then incorporating with the grains after the precipitation a dithiocarbamate, said emulsion being free from polyvalent metal salt halogen acceptors, e.g., stannous chloride.

3,597,211

PHOTOGRAPHY

James F. Betts, Euclid, and Victor P. Petro, Brecksville, Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated

No Drawing. Filed Oct. 18, 1968, Ser. No. 768,895

Int. Cl. G03c 1/72

U.S. Cl. 96—88 5 Claims

Photosensitive compositions comprising a mixture of at least one Schiff's base and at least one activator for the Schiff's base in such amounts and such proportions that a visible or developable latent image is produced when the composition is exposed to a pattern of radiation of the proper wavelength. The Schiff's base and activator materials are preferably dissolved in or dispersed in or supported in or on a binder support or carrier which may be a synthetic resin polymer or paper or cloth or other suitable carrier.

3,597,212

PHOTOSENSITIVE ELEMENTS AND PROCESS

Frank G. Webster and Donald W. Heseltine, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 30, 1968, Ser. No. 772,020

Int. Cl. G03c 1/52; B41m 5/00

U.S. Cl. 96—90 16 Claims

Photosensitive elements and a process of photographic reproduction are described employing a photosensitive composition comprising a heterocyclic nitrogen compound and a ketomethylene compound or a reactive cyclic ammonium quaternary salt which on exposure to actinic radiation react to form a dye.

3,597,213
FOG REDUCTION IN PHOTOGRAPHIC SILVER HALIDE EMULSIONS
Fritz Dersch and Giacomo Luciani, Binghamton, N.Y., assignors to GAF Corporation, New York, N.Y.
No Drawing. Filed Feb. 12, 1968, Ser. No. 704,518
Int. Cl. G03c *1/34*
U.S. Cl. 96—109 10 Claims

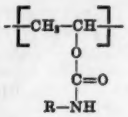
Photographic elements having thereon a silver halide emulsion layer, and containing in said layer or an adjacent layer, a 2,2'-(p,p-biphenylene)-3,3',5,5'-tetrasubstituted bistetrazolium salt as a fog reducing agent.

3,597,214
SULFURIC ACID ESTERS OF BUTYNEDIOL-POLYALKYLENE OXIDE CONDENSATES AS ANTIFOGGANT IN SILVER HALIDE EMULSIONS
E Scudder Mackey and Fritz Dersch, Binghamton, N.Y., and Robert E. Leary, Somerville, N.J., assignors to GAF Corporation, New York, N.Y.
No Drawing. Filed Jan. 12, 1968, Ser. No. 697,304
Int. Cl. G03c *1/34*
U.S. Cl. 96—109 8 Claims

A photographic element having incorporated in the light-sensitive silver halide emulsion layer or in a colloid layer contiguous therewith a sulfuric acid ester of a condensation product of an alkylene oxide with a butynediol.

3,597,215
PHOTOGRAPHIC SILVER HALIDE AND A POLY (VINYL ALCOHOL) BINDING AGENT
Edward P. Abel and Louis M. Minsk, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Nov. 25, 1968, Ser. No. 778,846
Int. Cl. G03c *1/04*
U.S. Cl. 96—114 9 Claims

Polymers comprising about 5 to about 30 mole percent of recurring units having the formula:

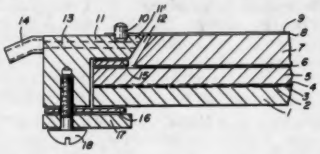


where R is hydrogen or methyl are particularly effective in improving the covering power and sensitometric properties of photographic silver halide materials.

3,597,216
HIGH TEMPERATURE PHOTORESIST OF CROSS-LINKED POLY(2,6 - DIMETHYL-1,4-PHENYLENE OXIDE)
Frank Berardinelli, Millington, N.J., and Jay Gervasi, Greensboro, N.C., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed Sept. 24, 1969, Ser. No. 860,803
Int. Cl. C08f *1/16, 1/60;* G03c *1/68*
U.S. Cl. 96—115P 4 Claims

Poly (2,6-dimethyl-1,4-phenylene oxide) is used as a photoresist in the preparation of letterpress plates requiring the use of etchants under drastic conditions, such as sulfuric acid at temperatures of 140–150° C. The resist is applied to the plate from a solution in a chlorinated ethylene, preferably trichloroethylene and containing a peroxide such as t-butylperbenzoate, a cross-linking agent, e.g., the diacrylate of bis-hydroxyethyl terephthalate and thioxanthen-9-one as preferred sensitizer. The resist is particularly effective as applied to plates composed of Celcon, an acetal copolymer.

3,597,217
COMBINATION HALFTONE SCREEN AND EMULSION POSITIONING PLATE
Erns. E. Schumacher, 3113 Postfach, 6 Frankfurt am Main, Germany
Filed Oct. 24, 1968, Ser. No. 770,301
Claims priority, application Germany, Oct. 24, 1967, P 15 97 787.4
Int. Cl. G03f *5/00*
U.S. Cl. 96—116 14 Claims



A combination halftone screen and emulsion carrier plate whereby an independent photosensitive emulsion is accurately positioned in precisely spaced and parallel relation with the halftone screen grid.

3,597,218
METHOD FOR PREPARATION OF FEED
Seiko Matsuoka, 9–30 Yanagi-machi, Nase-shi, Kagoshima-ken, Japan
No Drawing. Filed Sept. 4, 1968, Ser. No. 757,501
Claims priority, application Japan, Sept. 6, 1967, 42/57,671
Int. Cl. A23k *1/00*
U.S. Cl. 99—9 3 Claims

A method of preparing an animal feed from bagasse which comprises culturing a cellulose-decomposing microorganism, a nitrate-forming microorganism, a starch-hydrolyzing and proteolytic microorganism, and a lignin-decomposing microorganism together in a medium consisting of wheat bran and rice bran to obtain a composite inoculum, inoculating bagasse with said inoculum and culturing it for 24 hours.

3,597,219
CHILLPROOFING OF BEVERAGES USING INSOLUBLE POLYMER-ENZYME PRODUCT
Bernard S. Wildi, Kirkwood, and David C. Boyce, Webster Groves, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 27, 1968, Ser. No. 763,352
Int. Cl. C12h *1/04;* A23l *1/02*
U.S. Cl. 99—48 30 Claims

Improved process for chillproofing of beverages, especially malt beverages, using insoluble polymer-enzyme products. Permits removal of enzyme, reuse and attendant economies and also provides improved chillproofing stability, clarity, and taste in the beverage treated; beverages chillproofed in this manner.

3,597,220
CHILLPROOFING OF BEVERAGES USING INSOLUBLE BASIC POLYMER-ENZYME PRODUCT
Bernard W. Weinrich, St. Charles, John H. Johnson and Bernard S. Wildi, Kirkwood, and David C. Boyce, Webster Groves, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 27, 1968, Ser. No. 763,369
Int. Cl. A23l *1/02;* C12h *1/04*
U.S. Cl. 99—48 35 Claims

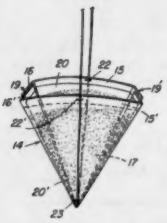
Improved process for chillproofing of beverages, especially malt beverages, using insoluble basic polymer-enzyme products, whereby the activity-pH profile and substrate-binding character of normally inactive or non-optimally active enzymes can be optimized for performance at the pH range of the beverage. Permits removal of enzymatically-active agents, reuse and attendant eco-

nomics, and also provides improved chillproofing stability, clarity, and taste in the beverage treated; beverages chillproofed in this manner.

3,597,221
CHILLPROOFING OF BEVERAGES USING BASIC POLYMER PRODUCTS
Kurt A. Ladenburg, St. Louis, Bernard W. Weinrich, St. Charles, and John H. Johnson, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 27, 1968, Ser. No. 763,383
Int. Cl. A23l *1/02*; C12h *1/04*
U.S. Cl. 99—48 19 Claims

Improved process for chillproofing of beverages, especially malt beverages, using insoluble basic polymer products, wherein components of said beverages which lead to chill-haze and oxidative instability upon aging are removed from the beverage through a process of specific sorption while leaving flavor components in said treated beverage. Provides improved chillproofing stability, color, clarity and taste in the beverage treated; beverages chillproofed in this manner.

3,597,222
INFUSION PACKET
Thaddeus John Kalemba, 1336 River Ave., Point Pleasant, N.J. 08742
Filed Mar. 22, 1968, Ser. No. 715,375
Int. Cl. A23f *3/00*
U.S. Cl. 99—77.1 8 Claims



An infusion packet having two oppositely disposed, rigidly separated pockets of tea or the like joined together by two tapering end portions which form a narrow, triangular shaped porous cup.

3,597,223
METHOD FOR PREPARING UNBROWNED BREAD LOAVES IN SLICED FORM
Albert J. Gordon, Studio City, Calif., assignor to Gordon Bread Company, Inc.
Filed June 30, 1969, Ser. No. 837,394
Int. Cl. A21d *8/06*
U.S. Cl. 99—90R 5 Claims

A method for preparing substantially unbrowned sliced bread loaves, intended for later browning by the consumer, wherein proofed loaves of the bread dough are heated for at least thirty minutes to an internal dough temperature of 190–200° F., whereupon heating is discontinued and the loaves are sliced to toast-sized pieces.

3,597,224
UPGRADED FLOUR FOR USE IN CAKE PREPARATION
Norman B. Howard and James B. Martin, Hamilton, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Jan. 24, 1969, Ser. No. 793,880
Int. Cl. A21d *2/00, 2/28*
U.S. Cl. 99—93 5 Claims

Monostearin sodium sulfoacetate or propylene glycol monostearate sodium sulfoacetate, in solid ground form, is admixed with lower quality flour to produce a novel upgraded flour composition. The upgraded flour composition is utilized to produce cakes characterized by desirable volume, texture and eating qualities.

3,597,225
GALLATE-CONTAINING LIQUID SHORTENING FOR USE IN CAKE PREPARATION AND CAKE MIX CONTAINING THE SAME
Donald H. Hughes, Green Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Feb. 25, 1969, Ser. No. 802,252
Int. Cl. A23d *5/00*; A21d *13/08*
U.S. Cl. 99—94 7 Claims

Alkyl gallate high temperature batter stabilizers are used in combination with liquid glyceride oil shortenings and alpha-phase crystal-tending emulsifiers as ingredients in cake preparation to provide cakes of improved volume, texture, and eating quality. A cake mix containing these ingredients provides these same benefits.

3,597,226
KOJYL ACYLATE CONTAINING LIQUID SHORTENING FOR USE IN CAKE PREPARATION AND CAKE MIX CONTAINING THE SAME
Donald H. Hughes, Green Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Feb. 25, 1969, Ser. No. 802,253
Int. Cl. A23d *5/00*; A21d *13/08*
U.S. Cl. 99—94 8 Claims

Kojyl acylate high temperature batter stabilizers are used in combination with liquid glyceride oil shortenings and alpha-phase crystal-tending emulsifiers as ingredients in cake preparation to provide cakes of improved volume, texture, and eating quality. A cake mix containing these ingredients provides these same benefits.

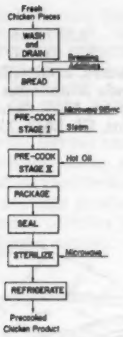
3,597,227
NOVEL AMYLOSE COATINGS FOR DEEP FRIED POTATO PRODUCTS
Daniel G. Murray, Muscatine, Iowa, and Nicholas G. Marotta, Green Brook, and Richard M. Boettger, Morristown, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
No Drawing. Continuation-in-part of applications Ser. No. 412,818, and Ser. No. 412,843, both Nov. 20, 1964. This application Apr. 3, 1968, Ser. No. 718,356
Int. Cl. A23l *1/12*
U.S. Cl. 99—100 4 Claims

A process for preparing deep fried potato products, including potato chips, french fried potatoes, and specialty products which are all characterized by their improved quality and the products thus produced; said process comprising the coating of such potato products, prior to the deep frying thereof in a hot cooking oil, with an aqueous dispersion of a high amylose starch or the amylose fraction resulting from the separation of whole starch into its amylose and amylopectin components.

3,597,228
METHOD OF PREPARING PRECOOKED POULTRY PIECES
Morris R. Jeppson, Danville, and Charles J. Rogers, Sunol, Calif., assignors to Cryodry Corporation, San Ramon, Calif.
Filed June 30, 1967, Ser. No. 650,499
Int. Cl. A22c *21/00*; A23b *1/00*
U.S. Cl. 99—107 16 Claims

A precooked food product which can be stored under refrigeration and prepared for serving by a brief reheating is prepared from poultry by a combination of micro-

wave, steam and oil cooking. The poultry may be breaded prior to the microwave treatment to prepare a fried



chicken type of product or may be packaged in a reheatable container with any of various sauces.

3,597,229
BUTTERLIKE MARGARINE
Aart Mijnders, Ridderkerk, and Herbert Willem Lincklaen Westenberg, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Dec. 29, 1967, Ser. No. 694,381
Int. Cl. A23d *3/00*
U.S. Cl. 99—122R **6 Claims**

Margarine having butterlike properties prepared from a fat blend comprising an olein fraction melting at 30–36° C. of a rapidly crystallizing hydrogenated animal or vegetable fat.

3,597,230
PLASTIC SHORTENING HAVING A HIGHLY STABLE BETA-PRIME CRYSTALLINE PHASE
Edward E. Colby, Cincinnati, and Cornelis H. Japikse, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 19, 1968, Ser. No. 753,437
Int. Cl. A23d *5/00*
U.S. Cl. 99—122 **7 Claims**

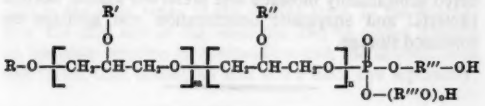
A hardstock composition comprising two components combined in certain proportions provides improved beta-prime-phase stability in plastic shortening. The hardstock components are a beta-prime-tending C_{14-26} hardstock containing at least a minimum amount of C_{20-22} fatty acids and a beta-prime-tending C_{14-18} hardstock containing at least a minimum amount of C_{16-18} fatty acids.

3,597,231
DEHYDRATED PUMPKIN MIX
Frederic J. Kane, 1029 Ridge Ave., Philadelphia, Pa. 19123
No Drawing. Filed Jan. 2, 1968, Ser. No. 694,789
Int. Cl. A23g *3/00*; A23l *1/14*
U.S. Cl. 99—139 **1 Claim**

A dehydrated pumpkin mix comprising dehydrated pumpkin flour, dehydrated milk having a percentage by weight as compared to the weight of the pumpkin flour of approximately sixty-two percent, and dehydrated egg having a percentage by weight as compared to the weight of the pumpkin flour of approximately thirty-seven percent.

3,597,232
STARCH-CONTAINING FOOD COMPOSITIONS WITH FATTY ACYL POLYPHOSPHATE GEL MODIFIERS
Ralph B. Fearing, Bardonia, and John C. Sourby, Hawthorne, N.Y., assignors to Stauffer Chemical Company
No Drawing. Filed Apr. 24, 1968, Ser. No. 723,926
Int. Cl. A23l *1/14, 1/00*
U.S. Cl. 99—139 **1 Claim**

A phosphate food additive composition for combining with foodstuff containing at least starch and water having the formula:



wherein R can be hydrogen or a long chain fatty acyl group having between 7 and 50 carbon atoms and R′ can be hydrogen or a long chain fatty acyl group having from 7 to 50 carbon atoms, R″ can be hydrogen or a long chain fatty acyl group having from 7 to 50 carbon atoms, R‴ is an alkylene group having at least 2 carbon atoms but less than 10, but when R″ is a hydrogen atom at least R or R′ must be a fatty acyl group, *m* can be an integer between 1 and 10, *n* can be an integer between 1 and 10, *o* can be an integer between 1 and 10.

3,597,233
NON-FAT TOPPING COMPOSITIONS
Bernard A. Patterson, 4040 N. LeClaire Ave., Chicago, Ill. 60614
No Drawing. Filed Feb. 13, 1969, Ser. No. 799,091
Int. Cl. A23l *1/00, 1/14*
U.S. Cl. 99—139 **5 Claims**

A temperature stable, non-fat emulsion having improved whipping properties and comprising a mixture of a sugar, a non-ionic emulsifying composition containing a glyceride ester in which at least 90% of the ester groups present are long chain monoester groups with a polyoxyethylene sorbitan stearate.

3,597,234
NOVEL SUBSTITUTED TETRAZOLE AND USE THEREOF
William L. Garbrecht, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Original application Apr. 14, 1967, Ser. No. 630,832, now Patent No. 3,515,727, dated June 2, 1970. Divided and this application Sept. 9, 1969, Ser. No. 870,152
Int. Cl. A23l *1/26*; A23k *1/00*
U.S. Cl. 99—141A **5 Claims**

5-(3-hydroxyphenoxy)-1H-tetrazole is prepared via reaction of resorcinol monoacetate with cyanogen bromide in the presence of triethylamine and sodium azide, followed by hydrolysis under basic conditions. The product, or a nontoxic, physiologically acceptable salt thereof, is used as a sugar substitute for sweetening caloric or noncaloric materials and for the control of viruses.

3,597,235
PRESERVATION OF HARVESTED PRODUCE WITH OXYGEN-FREE ENZYMOCIDAL AND BACTERICIDAL GASES
Amihud Kramer, Silver Spring, Md., assignor to Food Technology Corporation, South Reston, Va.
No Drawing. Filed May 9, 1968, Ser. No. 728,315
Int. Cl. A23l *3/00*
U.S. Cl. 99—154 **10 Claims**

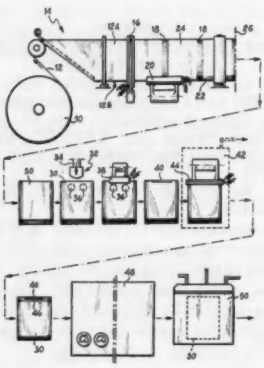
There is provided a process for the preservation of raw and fresh biological harvested produce which com-

prises the steps of subjecting the produce to a sub-atmospheric pressure for a period of time at least sufficient to substantially evacuate the gaseous oxygen content from the tissue structure thereof; subsequently exposing the substantially oxygen-free produce to an enzymocidal gas for a time period at least sufficient to substantially deactivate the deteriorative oxidative enzyme content within the produce; and simultaneously with or subsequent to the exposure to an enzymocidal gas, also exposing the produce to a bactericidal gas for a period of time at least sufficient to sterilize the produce. The so-treated produce is rendered substantially biostatic and preserved against normal bacterial and enzymatic deterioration and spoilage on sustained storage.

3,597,236
PROCESS FOR PRESERVING THE COLOR OF FRESH MEAT
Ervin W. Hopkins, Hinsdale, and Kunito Sato, Chicago, Ill., assignors to Armour and Company, Chicago, Ill.
No Drawing. Filed Aug. 8, 1967, Ser. No. 659,011
Int. Cl. A23b *1/00*
U.S. Cl. 99—157 **6 Claims**

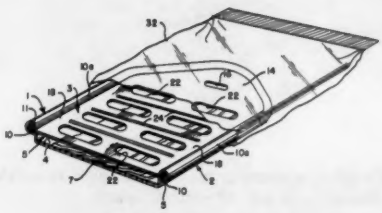
An agent for preserving the color of meat comprising ascorbic acid and a chemical selected from the group consisting of para-aminobenzoic acid, meta-aminobenzoic acid, isonicotinic acid and N-ethylnicotinamide.

3,597,237
METHOD FOR PACKAGING FOOD PRODUCTS IN FLEXIBLE CONTAINERS
Giovanni Nughes, Monza, Italy, assignor to Star Stabilimento Alimentare S.p.A., Agrate Brianza, Milan, Italy
Filed Jan. 31, 1969, Ser. No. 795,469
Claims priority, application Italy, Oct. 28, 1968, 53,661/68
Int. Cl. B65b *9/02, 31/02*
U.S. Cl. 99—171 **7 Claims**



Method of packaging a foodstuff in a sterilizable container of the envelope-type made of a flexible laminate comprising an inner, heat-sealable polypropylene layer, wherein all sides of the envelope are fluid tight sealed by a twin-bar heat-sealing system, and wherein the closing side of the filled envelope is twin-bar sealed in vacuum by a heat impulse after the side has been clamped flat between its sealing bars in cool condition of the latter. The method also include stitch-sealing the lips of the envelope on its closing side after filling, preparatory to the heat impulse sealing, as well as sterilizing the sealed package and chromatographically testing it for leakage.

3,597,238
PRE-COOKED FOOD PACKAGE
Edward W. Scharre, Louisville, Ky., assignor to Anaconda Aluminum Company
Filed May 14, 1969, Ser. No. 824,596
Int. Cl. B65b *25/06*
U.S. Cl. 99—174 **5 Claims**



A package for containing pre-cooked foodstuffs and the like is disclosed consisting generally of a metal foil pan and lid, the lid having a plurality of vent openings and being strengthened by a series of embossed ribs extending transversely across the surface thereof, the construction being such that the pan and lid together support the food contents in an upright manner when the package is inserted into a toaster. The exterior of said package is coated with a dielectric insulating composition and the entire package is disposed within a hermetically sealed outer wrapping.

3,597,239
METHOD OF MANUFACTURING FROZEN OIL-BLANCHED DICED POTATOES SUITABLE FOR PREPARING HASH BROWN POTATOES
Frederick H. Vahlsing, Jr., Allentown, N.J., assignor to Vahlsing, Inc.
No Drawing. Filed Sept. 25, 1967, Ser. No. 670,407
Int. Cl. A23b *7/06*
U.S. Cl. 99—193 **2 Claims**

Frozen oil-blanched diced potatoes are made by cutting pre-cooked, pre-fried, frozen potato pieces of relatively large size into smaller-sized segments to eliminate agglomeration problems in the manufacturing process and to enhance the taste and appearance qualities of the product when reheated or fried for consumption.

3,597,240
ENHANCED DIPOLAR EFFECTS IN MICROWAVE PROCESSING
Thomas R. Foltz, Jr., Clarendon Hills, Ill., assignor to Armour and Company, Chicago, Ill.
No Drawing. Filed May 28, 1969, Ser. No. 828,708
Int. Cl. A23l *3/32*
U.S. Cl. 99—221 **9 Claims**

A process for creating sterilization temperatures in particulate materials through the use of microwave heating. A lossy liquid is added to the material before subjecting it to microwave heating, whereby the resultant change in the loss characteristics of the particulate material allows the production of sterilization temperatures with the application of microwave energy.

3,597,241

METALLO-CERAMIC COMPOSITIONS, HAVING AT LEAST THREE COMPONENTS, FOR THE PRODUCTION OF PROTECTIVE COATINGS FOR FERROUS AND NON-FERROUS METALLIC SURFACES

Giancarlo Perugini, Merano, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Nov. 23, 1966, Ser. No. 596,400
Claims priority, application Italy, Nov. 29, 1965, 26,449/65
Int. Cl. C23c 7/00
U.S. Cl. 106—1 13 Claims

A process for protecting ferrous and non-ferrous metals against high temperature and acting as a thermal barrier, anti-oxidant barrier and/or electro-insulating barrier. The composition used and coatings produced are also shown. The composition illustrated contains 15 to 60% Cr, 10 to 50% Ni and 10 to 40% of a ceramic oxide having a melting point ≥1900° C.

3,597,242

FLAME RETARDANT CELLULOSE ACETATE ARTICLES

Joseph Di Pietro, Alma, Mich., and Willard C. Brinegar, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 538,955, Mar. 31, 1966. This application Aug. 25, 1969, Ser. No. 852,903
Int. Cl. C09d 5/18
U.S. Cl. 106—15 14 Claims

A composition comprising cellulose acetate, a halogenated paraffin and a synergistic agent selected from the group consisting of phenyl phosphates, 2,5-dimethyl-2,5-di(5-butyl-5-peroxy)hexane, t-butyl-hydroperoxide, nitroso benzene and phenyl hydrazine.

3,597,243

FLAME RETARDANT CELLULOSE ACETATE ARTICLES

Willard C. Brinegar, Charlotte, N.C., and Joseph Di Pietro, Alma, Mich., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 538,968, Mar. 31, 1966. This application Aug. 25, 1969, Ser. No. 852,902
Int. Cl. C09d 5/18
U.S. Cl. 106—15 10 Claims

A composition comprising cellulose acetate, a halogenated alkyl phosphate, a second additive selected from the group consisting of halogenated paraffins, dicumyl peroxide, di(t-butyl) peroxide, t-butyl-hydroperoxide, 2,5-dimethyl-2,5-di(t-butyl-5-peroxide) hexane, phenyl hydrazine, nitrobenzene, nitrosobenzene and 2,2'-azodiisobutyronitrile, and a third additive selected from the group consisting of diphenyl disulfides, phenyl phosphates and p-nitrosobenzoxy ethyl lactate.

3,597,244

WATER-FAST INKS AND METHOD FOR MAKING SAME

Abraham Fookson, Silver Spring, Md., and Henry Peper, Pacific Palisades, and Daniel W. Seregely, Los Angeles, Calif., assignors to The Gillette Company, Boston, Mass.

No Drawing. Continuation of application Ser. No. 719,833, Apr. 9, 1968. This application June 19, 1970, Ser. No. 48,933
Int. Cl. C09d 11/00
U.S. Cl. 106—22 2 Claims

A water-fast ink solution for use in ballpoint pens, said solution containing a water-insoluble resin in a solvent therefor and a water-insoluble dye salt which is formed in situ by the reaction of a sulfonic acid dye with a basic dye and/or an acid salt of a basic dye, the acid being either a mineral acid or a carboxylic acid. A method for producing such a water-fast ink solution for ballpoint pens which comprises dissolving a water-insoluble resin in a solvent therefor and dissolving a sulfonic acid dye, at least one basic dye, and, optionally, an acid in the resulting solution and heating and stirring the mixture. If the acid is present, there is formed an acid salt of the basic dye which subsequently reacts with the sulfonic acid dye to form a water-insoluble dye, said water-insoluble dye being soluble in the resin solvent and preferably also in the resin when in the molten state. In the alternative, the acid salt of the basic dye can be added directly to the resin solution in conjunction with the sulfonic acid dye rather than adding an acid and a basic dye separately.

3,597,245

PHOSPHATE OPTICAL GLASS WITH POSITIVE ANOMALOUS PARTIAL DISPERSION

Heinz Bromer, Hermannstein, Kreis Wetzlar, and Norbert Meinert and Johann Spincic, Wetzlar, Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany

No Drawing. Continuation of application Ser. No. 768,915, Oct. 18, 1968. This application May 12, 1970, Ser. No. 37,414
Claims priority, application Germany, Oct. 28, 1967, P 15 96 888.4
Int. Cl. C03c 3/00
U.S. Cl. 106—47Q 6 Claims

Novel optical glasses are disclosed which possess a positive anomalous partial dispersion and which are resistant to chemical influences, for example from the atmosphere, to such a degree that lenses manufactured from these glasses can be employed as front lenses in optical systems, such as photographic objectives, According to the invention the glasses are melted from a batch composition consisting essentially of:

5–20% by weight of the metaphosphates of the alkaline elements; 50–75% by weight of a constituent selected from a group consisting of the metaphosphates of the alkaline earth elements magnesium, calcium, strontium and barium; 2–15% by weight of titanium dioxide; and 2–15% of the oxide of beryllium.

3,597,246

GLASS COMPOSITION

Robert M. McMarlin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed Mar. 31, 1967, Ser. No. 627,460
Int. Cl. C03c 3/04, 13/00
U.S. Cl. 106—50 18 Claims

A glass composition is formed from only three constituents—silica, alumina, and beryllia. The fibers formed from said composition, on conventional production equipment, exhibit improved modulus, tensile strength and density over formerly available textile filaments, and show particular utility in reinforcement of plastic laminates where high strength to weight ratios are desired and imperative, for example, in nose cones, rocket motor cases and submarines.

3,597,247

ALUMINA REFRACTORIES

Daniel E. Reardon, Margate, N.J., assignor to Dresser Industries, Inc., Dallas, Tex.

No Drawing. Filed Mar. 3, 1970, Ser. No. 16,241
Int. Cl. C04b 35/10, 35/46, 35/48
U.S. Cl. 106—57 7 Claims

Fired refractory comprising TiO_2, ZrO_2 and the remainder Al_2O_3.

3,597,248

NOVEL GUANIDINE SILICATES, COMPOSITIONS AND USES

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Mar. 25, 1968, Ser. No. 715,556, now Patent No. 3,475,375, dated Oct. 28, 1969, which is a continuation-in-part of application Ser. No. 648,216, June 23, 1967. Divided and this application Aug. 6, 1969, Ser. No. 871,104

Int. Cl. C04b *19/04;* C09d *1/04*

U.S. Cl. 106—74 7 Claims

The present invention relates to compositions of matter containing as an essential ingredient, stable, non-crystalline guanidine silicates having a molar ratio of guanidinium ions to silicate ions of from 1.5 to 0.65. These compositions are characterized by the fact that they are amorphous and soluble in water, giving aqueous solutions which may be highly concentrated. The dried or dissolved materials are used as adhesives, binders, and film-forming agents. These guanidine silicates are prepared by bringing together a source of guanidinium ions and colloidal silica under closely controlled reaction conditions. Close process control is necessary to produce the novel amorphous compounds of this invention.

3,597,249

METHOD OF PRODUCING COMPOSITES OF INORGANIC BINDERS AND FIBERS FROM AQUEOUS SLURRIES

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation

No Drawing. Filed Aug. 21, 1968, Ser. No. 754,480

Int. Cl. C04b *31/04, 31/08*

U.S. Cl. 106—85 13 Claims

An improved method of producing fiber reinforced inorganic cementitious composites from aqueous slurries, as for example light weight insulation materials comprising asbestos fibers bonded together by a calcium silicate crystalline binder. The inorganic cementitious material is first grown upon the fibers and the fibers separated leaving the cementitious material bonded to the surface of the fibers. The cement coating fibers are then mixed into another slurry, with or without additional cementitious materials and/or fibers, and the cement coated fibers used for at least a nucleus for growing binder crystals during the hardening of the cementitious materials of the slurry.

3,597,250

COMPOSITION FOR PRODUCING PEARLESCENT EFFECTS IN COSMETIC PRODUCTS

Robert D. Rands, Jr., and Douglas W. Chapman, Greendale, Mo., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Filed Oct. 10, 1968, Ser. No. 766,614

Int. Cl. C09c *1/00*

U.S. Cl. 106—291 9 Claims

Bismuth oxychloride is deposited, preferably epitaxially, on thin mica platelets to produce a pearlescent pigment particularly useful in cosmetic products. The pigment is produced by adding a base to an aqueous suspension of mica containing a soluble bismuth salt and an excess of chloride ions to precipitate bismuth oxychloride on the surface of the mica platelets. Preferably a solution of the bismuth and a solution of the base are simultaneously added to the mica suspension at rates such that the suspension always contains an excess of the soluble bismuth salt. The resulting products are characterized by their low density, ease of suspension, and by the unusual translucency of the pearly effect which they impart to various cosmetic compositions.

3,597,251

CALCIUM CARBONATE PRODUCT

Daniel Kaufman, Grosse Ile, Mich., assignor to Wyandotte Chemicals Corporation, Wyandotte, Mich.

No Drawing. Filed Nov. 19, 1968, Ser. No. 777,181

Int. Cl. C09c *1/02*

U.S. Cl. 106—306 14 Claims

Preparation of an aqueous calcium carbonate slurry characterized by high stability, high solids content, and low viscosity by incorporating in such slurry about 0.05 to 0.5% by weight of either substantially pure zinc oxide or zirconium oxide or mixture of both.

3,597,252

METHOD FOR PRODUCING GLASS COMPOSITIONS

Hubert Schröder, Wiesbaden, and Georg Gliemeroth, Mainz-Mombach, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Germany

No Drawing. Filed May 4, 1967, Ser. No. 637,051

Claims priority, application Germany, May 7, 1966, J 30,783

Int. Cl. C03c *3/04;* C03b *1/00*

U.S. Cl. 106—52 7 Claims

There are disclosed SiO_2 containing glasses characterised by high melting points and low thermal expansion coefficients and a process for preparing them utilizing temperatures substantially lower than heretofore operable with SiO_2 containing glass compositions. The process involves employing the SiO_2 or another principal component of the glass in the form of a liquid organic compound, as for instance, in the form of its alcoholate. The liquid component or components are mixed together and/or with any non-liquid components, hydrolyzed and gelled. The resulting mass is then subjected to the action of heat to form a completely homogeneous oxidic molded glass body characterized by the aforenoted properties.

3,597,253

PRODUCTION OF FINELY DIVIDED ORGANICALLY MODIFIED WATER INSOLUBLE ALKALINE EARTH METAL AND EARTH METAL SILICATES

Helmut Beschke, Frankfurt am Main, Hans Pfleger, Neu Isenburg, Wilhelm Berndt, Frankfurt am Main, Peter Nauroth, Wesseling Bezirk Cologne, Horst Ferch, Bruchkobel, and Edith Eisenmenger, Offenbach am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Jan. 17, 1968, Ser. No. 698,410

Claims priority, application Germany, Jan. 17, 1967, D 52,029

Int. Cl. C09c *3/00*

U.S. Cl. 106—288B 5 Claims

Production of organically modified finely divided alkaline earth metal and earth metal silicates and silicas by wet precipitation of such silicates and silicas from alkali metal silicate solutions with aqueous solutions of alkaline

earth metal or earth metal salts or acids, preferably at temperatures between about 10 and 90° C. in the presence of water soluble reactive organic polymeric materials, for instance, polymers containing the reactive amino, hydroxyl, carboxyl, amide or keto groups. The thus obtained modified silicates and silicas can be further modified by effecting reactions with the reactive groups of the bound polymers in the silicates and silicas.

3,597,254
BLUE DYE MIXTURES

Fritz Graser, Ludwigshafen, and Guenther Riedel, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 2, 1968, Ser. No. 764,629
Claims priority, application Germany, Oct. 3, 1967, P 16 44 482.9
Int. Cl. C07c *97/12*; C08h *17/66*; C10l *1/12*
U.S. Cl. 106—288Q 3 Claims

Blue dye mixtures which are outstandingly suitable for coloring mineral oils and gasolines and which comprise at least three different 1,4-diaminoanthraquinone derivatives whose amino groups bear hydrocarbon radicals and hydrocarbon radicals containing ether groups as substituents.

3,597,255
CARBON DIOXIDE TREATMENT OF SILICEOUS PIGMENT

Frank E. Toonder, Wadsworth, Ohio, assignor to PPG Industries Inc., Pittsburgh, Pa.

No Drawing. Filed Oct. 2, 1968, Ser. No. 764,619
Int. Cl. C09c *3/00*
U.S. Cl. 106—309 20 Claims

The viscosity of aged aqueous slurries of siliceous pigments is maintained at low values by contacting the siliceous pigment with gas containing at least 1 percent carbon dioxide prior to forming the slurry. The carbon dioxide may be introduced to the pigment either as a gas or as a solid.

3,597,256
SUEDE-LIKE SHEET MATERIAL OF AN ACRYLONITRILE/BUTADIENE POLYMER CONTAINING AN ADDITIVE

Charles A. Young, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 18, 1968, Ser. No. 737,825
Int. Cl. B44c *1/20*, *1/00*
U.S. Cl. 117—8 13 Claims

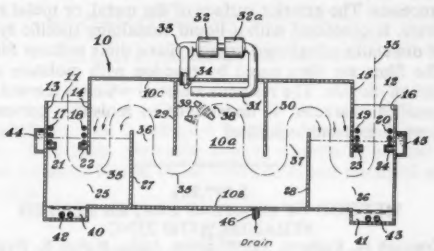
An improved supple, synthetic, microporous vapor permeable suede sheet material of a non-woven synthetic flexible fibrous web that is impregnated with a polymeric binder of butadiene and acrylonitrile and the polymeric binder contains about 0.1–20 parts of additive per 100 parts of binder where the additive is either a hydrocarbon oil or a silicone oil.

3,597,257
METHOD OF COATING ARTICLES WITH A FILM-FORMING MATERIAL

James L. Dunn, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 2, 1968, Ser. No. 741,939
Int. Cl. B44d *1/48*
U.S. Cl. 117—47 1 Claim

The spresent invention concerns a process for coating a surface with a film-forming material dissolved or dispersed in a chlorinated solvent, which comprises (1) raising the temperature of the surface while the surface passes through a first zone containing the saturated vapors of said solvent, applying said film forming-material in a second zone and removing the solvent from said film by maintaining said surface having said film in said second zone in immediate contact with air or other inert gas having a solvent relative humidity preferably less than 50%, and during which period the surface temperature



is raised above the boiling point of the solvent, introducing the surface into a third zone containing saturated vapors of said solvent and finally withdrawing the surface coated with the film to the ambient atmosphere, withdrawing the solvent laden air from said second zone, removing the solvent therefrom and returning said air to said second zone.

3,597,258
METHOD OF SCREENING A CATHODE-RAY TUBE

Howard G. Lange, Arlington Heights, and Song Whan So, Chicago, Ill., assignors to Zenith Radio Corporation

No Drawing. Filed Aug. 21, 1968, Ser. No. 754,458
Int. Cl. H01j *31/20*
U.S. Cl. 117—33.5 4 Claims

The image area or screen of a color cathode-ray tube receives by electrophotographic deposition deposits of various phosphor materials arranged thereover in a regular interlaced pattern. Thereafter, the screen area is recharged to develop an electric field for holding the phosphor deposits in place. Next, a fixer, comprising a carrier liquid and a resinous binder partially in solution and partially in suspension, is applied to the screen. The fixer has a high electrical volume resistivity to the end that the charge on the coated area is retained, causing the electric field to resist the tendency of mechanical forces incident to the application of the fixer to displace the individual phosphor deposits from their assigned positions.

3,597,259
METHOD OF MAKING HIGH RESOLUTION IMAGE DEVICES

Eugene Wainer, Shaker Heights, Ohio, assignor to Horizons Incorporated, a division of Horizons Research Incorporated

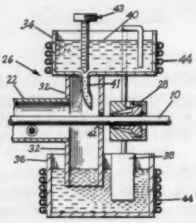
No Drawing. Filed May 21, 1969, Ser. No. 826,704
Int. Cl. H01j *31/20*
U.S. Cl. 117—33.5C 6 Claims

The preparation of phosphors such as those based on zinc sulfide and/or cadmium sulfide in the form of very fine particles which include not only the sulfide but also the activator and mineralizer required to make this an active material and the deposition of such an active material from a clear solution containing the phosphor, mineralizer and dopant necessary to complete an active material, into the pores of a suitable substrate, thereby producing the essential element for a high resolution information retrieval transducer.

3,597,260
PASSIVATION OF METALS
Marnell A. Segura, Baton Rouge, La., assignor to Esso Research and Engineering Company
No Drawing. Filed Nov. 1, 1966, Ser. No. 591,124
Int. Cl. B44d 1/44; C23f 9/02; B32f 15/08
U.S. Cl. 117—62.2 10 Claims

A process for passivating chemically active ferrous metals, especially powdered metals and porous, compacted forms of metals as resultant from direct iron ore reduction processes. The exterior surface of the metal, or metal substrate, is contacted with a liquid containing specific types of dimetallo substituted organo silane diols to form films. The films are then cured by reaction with moisture and carbon dioxide. The resinous material which is formed, of specified character, is impervious to moisture, corrosive gases, fumes and impurities.

3,597,261
METHOD OF COATING COPPER PLATED STRANDS WITH ZINC
Kenneth G. Coburn, Middletown, Ohio, Ralph E. Evans, Denver, Colo., and Marvin B. Pierson, Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
Continuation-in-part of application Ser. No. 616,680, Feb. 16, 1967. This application Dec. 12, 1968, Ser. No. 783,266
Int. Cl. B05c 11/06; C23c 1/02
U.S. Cl. 117—71 3 Claims



A method and apparatus for continuously applying a molten coating metal to a strand-like article. The method includes the steps of cleaning the surface of the strand and preparing it to receive the molten metal, and then supplying an excess of molten metal to the moving strand. The apparatus has a coating chamber through which the strand passes in a horizontal direction. The chamber has substantially un-restricted entry and exit openings, and includes a reservoir and passage means for supplying an excess of the coating metal to the moving strand.

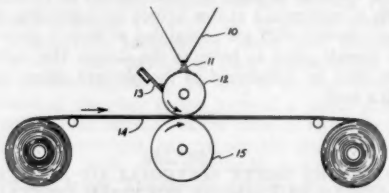
3,597,262
PRODUCTION OF WOOD-SYNTHETIC RESIN COMBINATIONS
Erich Bader, Hanau, and Hubert Koert, Gross-Auheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed June 18, 1968, Ser. No. 737,820
Claims priority, application Germany, June 20, 1967, D 53,378
Int. Cl. B27k 3/00; B44d 1/14, 1/26
U.S. Cl. 117—73 6 Claims

In the production of wood-synthetic resin combinations by impregnation of wood with a liquid polymerizable composition and curing the polymerizable composition taken up by the wood, the impregnated wood is coated prior to curing with an aqueous or alcoholic solution of a film forming substance having hydrophilic groups and which substance is insoluble in the impregnating composition.

3,597,263
WATER LEAK DETECTORS
Allan R. Bancroft and Allan H. Dombra, Deep River, Ontario, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada
No Drawing. Filed July 21, 1967, Ser. No. 654,986
Claims priority, application Canada, July 29, 1966, 966,739
Int. Cl. G01m 3/04
U.S. Cl. 117—94 35 Claims

Water leaks from containers or conduits are detected by chemical indicators. These may accumulate water at the leak source to give a clearly discernible colour change. Such indicator may be provided in the form of a non-corrosive easily removable paint or a non-corrosive adhesive tape with or without a protective transparent cover so as to facilitate direct application to a metal surface. The indicator can comprise (a) a carrier and a strontium chromate/silver sulphate couple as the active indicator, or (b) a carrier and a potassium ferrocyanide/ferric sulphate-inert brightener couple as the active indicator, or (c) a carrier and a potassium ferrocyanide/cupric sulphate-inert brightener couple as the active indicator. There may also be present an adhesive component, a fugitive dispersing component and a water miscibility improving component.

3,597,264
REMOISTENABLE HOT MELT ADHESIVE ARTICLES
Julius Sirota, South Plainfield, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.
Continuation-in-part of abandoned application Ser. No. 620,709, Mar. 6, 1967. This application Feb. 2, 1970, Ser. No. 7,508
Int. Cl. C09j 7/04
U.S. Cl. 117—122S 3 Claims



Flexible web substrates coated on at least one surface, or part thereof, with a remoistenable hot melt adhesive composition containing as the primary ingredient thereof, polyvinyl acetate which has been hydrolyzed by means of an acid hydrolysis technique to the extent that from about 50 to 85% of its original number of acetate groups are converted into hydroxyl groups. Remoistenable hot melt adhesives containing the latter hydrolysis products are ideally suited for use in the manufacture of envelopes, stamps, gummed tapes and wallpaper, etc.

3,597,265
FIBER LUBRICANTS
Kenneth T. Mecklenborg and Kenneth H. Pettengill, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio
No Drawing. Filed May 6, 1968, Ser. No. 727,028
Int. Cl. C03c 25/02
U.S. Cl. 117—126GR 2 Claims

Fiber lubricants which comprise partially amidated polyalkylenimines are provided. Exemplary of the lubricant compounds disclosed is the reaction product of a mixture of C_2 to about C_{18} fatty acids with a polyethylenimine having a molecular weight of about 1200. The reaction product has a residual amine value of from about 300 to 400.

3,597,266
ELECTROLESS NICKEL PLATING

Gary Leibowitz, Woodbridge, and Richard L. Mullaney, Jr., Bristol, Conn., assignors to Enthone, Incorporated, West Haven, Conn.

No Drawing. Filed Sept. 23, 1968, Ser. No. 761,865
Int. Cl. B44d *1/14, 1/092*
U.S. Cl. 117—130E 2 Claims

High stability, autocatalytic electroless nickel plating bath comprising an aqueous solution containing about 0.08–0.16 mole/liter nickel ions, about 0.19–0.38 mole/liter hypophosphite ions, and essentially about 0.35–3.68 mole/liter ammonium ions, about 0.09–1.07 mole/liter acetate ions and about 0.007–0.14 mole/liter citrate ions, the solution having a pH in the range of about 7.0 to about 9.5 The ammonium ions complex palladous ions introduced into the plating bath by "drag out" from the activator solution to form a soluble ammonium-palladium complex, which inhibits reduction of palladous ions to zero valent catalytic palladium by the hypophosphite of the bath. By the removal of potential catalyst sites from the bath or by rendering the potential sites relatively catalytically inactive, random deposition of the nickel and premature loss of the bath is avoided.

3,597,267
BATH AND PROCESS FOR CHEMICAL METAL PLATING

Glenn O. Mallory, Jr., Inglewood, and Donald W. Baudrand, Temple City, Calif., assignors to Allied Research Products, Inc.

No Drawing. Continuation-in-part of application Ser. No. 468,921, July 1, 1965, and a continuation of application Ser. No. 661,218, Aug. 17, 1967. This application Feb. 26, 1969, Ser. No. 804,369
Int. Cl. C23c *3/02*
U.S. Cl. 117—130 2 Claims

A bath and process for the electroless (chemical) plating of nickel, cobalt, iron and chromium on other materials such as metals and plastics. The bath utilizes a reducing agent to which is added a nickel, cobalt, iron or chromium coordination compound as the source of the plating metal. Other constituents also normally added to the bath are complexing agents and buffering agents. Utilization of metal-coordination compounds as the starting plating material source greatly enhances the operating characteristics of the bath and makes possible the plating of materials heretofore not susceptible to electroless plating.

3,597,268
METHOD OF IMPARTING SOIL RESISTANCE TO SYNTHETIC TEXTILE MATERIALS AND THE RESULTING MATERIALS

Thomas L. Smith, Cary, N.C., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Aug. 13, 1969, Ser. No. 849,922
Int. Cl. B32b *27/02;* D06m *15/66*
U.S. Cl. 117—138.8 8 Claims

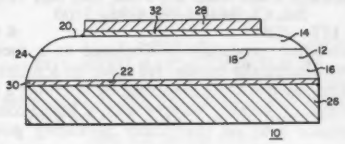
Fibers and fabrics based on polypropylene are given improved resistance to deposition of oily soil during laundering by addition to the surface thereof a partially crosslinked reaction product of a specified poly (aminosiloxane) and a polyfunctional carboxylic acid.

3,597,269
SURFACE STABILIZATION OF SEMICONDUCTOR POWER DEVICES AND ARTICLE

Hung C. Chang, Monroeville, and John W. Ostroski, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1969, Ser. No. 862,418
Int. Cl. B44d *1/18;* H01l *3/00*
U.S. Cl. 117—213 12 Claims

Exposed surfaces of a body of semiconductor material having a portion of a PN junction exposed therein are etched and then cleaned with either a solution of iodine or a solution of iodine and iodine pentoxide. Immediately prior to depositing a dielectric film of silicon dioxide-silicon nitride to overlie the cleaned exposed PN junctions,

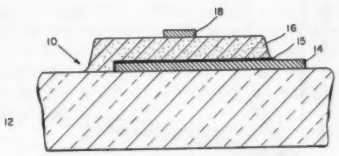


adsorbed iodine is removed from the body by hydrogen gas. A resinous protective coating material is applied to the dielectric film to afford mechanical and electrical protection.

3,597,270
INVERTED SOLID STATE DIODE

John A. Scott-Monck, Redondo Beach, and Arthur J. Learn, West Concord, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 15, 1968, Ser. No. 752,939
Int. Cl. B44d *1/18;* C23c *13/04*
U.S. Cl. 117—217 8 Claims



This invention relates to a method of producing an inverted thin film solid state device, i.e., a solid state device in which a semiconductive film is deposited on a high work functional metal. The inverted solid state device is produced by applying a film of high work function metal to a surface and then cooling the metal below room temperature while a thin film of sulfur is deposited on the surface of the metal. A thin layer of cadmium sulfide is deposited on the sulfur to prevent evaporation, the temperature is raised, and the deposition of the cadmium sulfide is completed. Deposition of a thin film of low work function metal on the cadmium sulfide completes the inverted solid state device.

3,597,271
METHOD OF PRODUCING AIR STABLE ALKALINE-EARTH METAL OXIDE WHILE AVOIDING EUTECTIC MELTING

John M. Cawley, Oakhurst, Robert G. Young, Nutley, and Albert W. Wainio, Livingston, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Filed July 9, 1969, Ser. No. 840,453
Int. Cl. B44d *1/02;* C23c; C23d
U.S. Cl. 117—224 7 Claims

The method of producing air stabilized alkaline-earth metal oxide emission material by means of a two-step heating process of mixed alkaline-earth metal carbonate, by which the eutectic melting stage of the carbonate-oxide mixture is avoided. Alkaline-earth metal carbonate is heated to a temperature which is below the eutectic melting temperature for alkaline-earth carbonate-oxide mixtures. The heating is continued until all of the alkaline-earth metal carbonate is converted to alkaline earth metal oxide. The alkaline-earth metal oxide is then heated from about 1300° C. to about 1750° C. for a predetermined time to render the oxide air stable.

3,597,272
ELECTROPHOTOGRAPHIC ELEMENT AND PROCESS

Eugene P. Gramza and Frederick A. Stahly, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

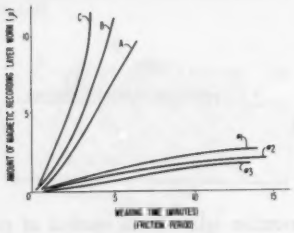
No Drawing. Filed Mar. 29, 1968, Ser. No. 717,386
Int. Cl. B44c *1/00*; G03g *5/00*
U.S. Cl. 117—218 6 Claims

An imbibition procedure is disclosed as a means for forming an electrically conductive layer on a suitable support. The conductive layer is formed by imbibing a binder-free solution of volatile solvent and a metal-containing semiconductor into an electrically insulating polymeric subcoating carried on a support and evaporating the solvent. The conductive layers are useful in electrophotographic elements.

3,597,273
MAGNETIC RECORDING MEDIUM

Goro Akashi and Yasuyuki Yamada, Odawara-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 12, 1969, Ser. No. 798,642
Claims priority, application Japan, Feb. 12, 1968, 43/8,705
Int. Cl. H01f *10/02*
U.S. Cl. 117—235 4 Claims

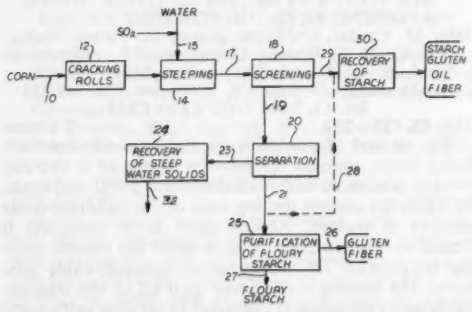


In a magnetic recording medium, there is provided a magnetizable layer comprising magnetizable particles dispersed in a binder, said binder comprising a copolymer of vinyl chloride and vinyl acetate, an epoxy resin and a polyisocyanate.

3,597,274
STARCH MANUFACTURE FROM CORN

Donald Lee Gillenwater, Gerald Bernard Pfundstein, and Allen Ross Harvey, Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Filed Mar. 2, 1970, Ser. No. 15,571
Int. Cl. C13l *1/02*
U.S. Cl. 127—68 5 Claims

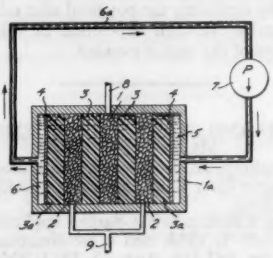


Starch is manufactured from corn by a process wherein corn kernels are first subject to cracking so as to fracture the hulls, the cracked corn is then steeped in an aqueous sulfur dioxide solution, a floury starch product is then separated from the steeped slurry, and further starch is recovered from the steeped material from which the said floury starch product has been removed.

3,597,275
PROCESS OF OPERATING FUEL CELL

August Winsel and Ralf Wendtland, Kelkheim, Taunus, Germany, assignors to Siemens-Schuckertwerke Aktiengesellschaft, Berlin and Erlangen, and Varta Aktiengesellschaft, Hagen, Westphalia, Germany

Filed July 13, 1966, Ser. No. 564,938
Claims priority, application Germany, July 15, 1965, S 98,219; Nov. 26, 1965, S 100,613; Dec. 10, 1965, S 100,880
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 7 Claims

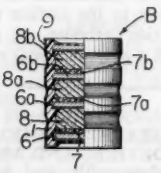


An electrolysis or fuel cell which includes a plurality of porous electrochemical reactive electrodes positioned alternately with porous electrically non-conductive diaphragms; the pores of the diaphragms at the faces adjoining the electrodes have a median radius smaller than that of the pores at the faces of the electrodes. A special electrode for use in a fuel cell battery is also disclosed as well as a process for the operation of the electrolysis or fuel cell. The fuel or electrolysis cell does not require separate gas chambers for each cell of the gases.

3,597,276
BATTERIES WITH FLAT CELLS

Jean Firmin Jammet, Poitiers, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

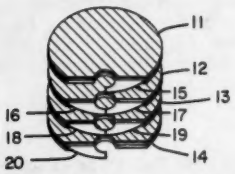
Filed Dec. 26, 1968, Ser. No. 786,989
Claims priority, application France, Dec. 28, 1967, 134,172
Int. Cl. H01m *21/00*
U.S. Cl. 136—111 4 Claims



Electrochemical generators or batteries using stacked so-called flat cells in a tubular main sheath whose inner profile is shaped to maintain the cells of the stack and components in place and to insure intercell sealing are

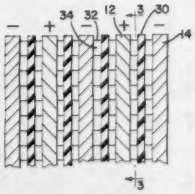
disclosed. The tubular sheath in turn is covered by an extensible second or outer sheath of plastic material which first is stretched to permit mounting in it of the main sheath and then allowed to contract. This effects application of compressive forces to the first sheath and its stacked cells, both laterally and axially. As a further feature, the outer plastic sheath is further treated prior to insertion into it of the main sheath to cause its subsequent further shrinkage as by application thereto of an appropriate solvent serving as a deplastifying agent which, upon evaporation creates the further shrinkage. The compression effect on the inner sheath and contents of the contraction of the outer plastic sheath as a result of release of stretch and its further contractive shrinkage as a result of evaporation of solvent is distributed uniformly providing more certain and regular insulation and internal sealing of the cells of the stack in the main tubular sheath.

3,597,277
ELECTRODE SET FOR GALVANIC CELLS
Siegfried Dickfeldt, Berliner Str. 70, Hagen, Germany, and Karl Steffens, Vaehalle Muhlenbrinkstr. 34, Hagen-Vorhalle, Germany
Continuation-in-part of application Ser. No. 665,039, Sept. 1, 1967. This application Oct. 8, 1969, Ser. No. 864,718
Int. Cl. H01m *5/00*
U.S. Cl. 136—1134R **4 Claims**



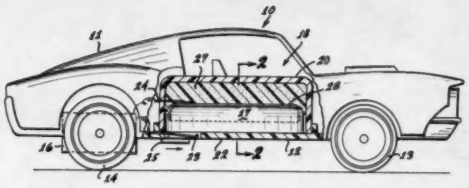
The flat-plate like electrodes in a battery, and particularly those in alkaline button cells, are formed in sets with plates having identical geometry and being stacked above one another and the interconnection between adjacent electrode plates of the same set being made within the confines of the structure defined by the stack of plates. Two sets of opposite polarity electrodes made in this fashion can be meshed together with suitable separator and electrolyte material in between to form a completed battery.

3,597,278
ELECTROLYTIC CELL COMPRISING MEANS FOR CREATING A MAGNETIC FIELD WITHIN THE CELL
Joe W. Von Brimer, 3177 S. Highland Drive, Las Vegas, Nev. 89102
Filed Nov. 15, 1968, Ser. No. 776,120
Int. Cl. H01m *11/00, 15/00*
U.S. Cl. 136—136 **8 Claims**



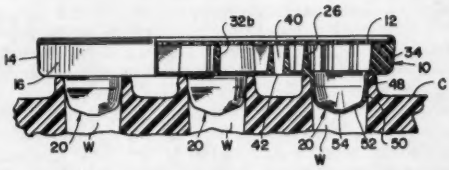
An electrolytic cell comprising a positive electrode and a negative electrode, an electrolyte in association with said electrodes, and means for creating a magnetic field within the cell for circulating the electrolyte when current is flowing between the electrodes. One disclosed form includes permanent magnets extending between the plates forming the cell electrodes, to establish lines of flux extending generally parallel to the plates and serving to maintain the plates in a spaced apart relation.

3,597,279
TOY WITH BATTERY HOLDER
Harvey W. La Branche, Palos Verdes Peninsula, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 24, 1969, Ser. No. 809,855
Int. Cl. H01m *1/04*
U.S. Cl. 136—173 **8 Claims**



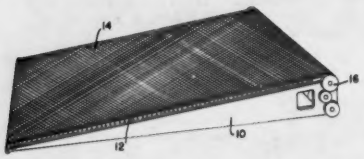
In an electric toy, game, novelty or amusement device utilizing a miniature self-contained rechargeable or extended life battery or cell as its source of power, an energy absorbing material is disposed adjacent to the battery or cell to prevent damage to the device or access to the electrolyte in the event of a swelling or separating of the battery or cell.

3,597,280
MULTIPLE VENT PLUG ASSEMBLY
Roy Erving Hennen, Mequon, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.
Filed Aug. 29, 1968, Ser. No. 756,129
Int. Cl. H01m *1/06*
U.S. Cl. 136—177 **10 Claims**



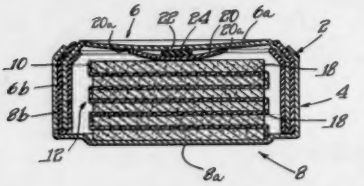
A multiple vent plug assembly for electrical storage batteries which includes a body composed of a base, preferably an integral, unitary structure, having peripheral walls and a cover with lateral partitions inside the body dividing it into a plurality of separate chambers. A plurality of hollow vent plugs, located on the bottom of the base and each provided with a vent opening into the battery cell, open into the chambers. Each chamber is provided with an outlet for venting to atmosphere through the base. The internal construction of the chamber and configuration of the vent outlet are such that the flow of gases passing upward through the vent plugs, through the chambers and out through the vent outlets is sufficiently obstructed to prevent the inadvertent discharge of the electrolyte to atmosphere and the leakage of liquid electrolyte through the outlets when the battery is partially tipped or completely inverted.

3,597,281
RECOVERY OF RADIATION DAMAGED SOLAR CELLS THROUGH THERMAL ANNEALING
James E. Webb, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Pao-Hsien Fang, Washington, D.C., and George Meszaros and William G. Gdula, Glenn Dale, Md.
Original application Oct. 21, 1966, Ser. No. 588,634. Divided and this application May 2, 1969, Ser. No. 843,251
Int. Cl. H01v *1/00*
U.S. Cl. 136—206 2 Claims



Apparatus for use onboard spacecraft to thermally anneal defects from solar cells. In one embodiment the "greenhouse effect" is employed to heat the cells to the desired annealing temperatures.

3,597,282
RECHARGEABLE SEALED SECONDARY BATTERY OF THE BUTTON TYPE
Vincent P. Farley, Jr., Nixon, N.J., assignor to Gulton Industries, Inc., Metuchen, N.J.
Filed July 9, 1969, Ser. No. 840,153
Int. Cl. H01m *1/06*
U.S. Cl. 136—178 5 Claims



A rechargeable button type battery formed by two casing halves insulated one from the other with a battery plate assembly positioned between the casing halves. A gas vent is provided through one of the preferably outwardly flexible portions of one of the casing halves. A sealing member is positioned in the casing and overlying the gas vent to seal off the vent during normal operation of the battery. A spring carries said sealing member and applies mechanical pressure against the battery plate assembly forcing the same against the other casing half. When the battery is overcharged, gases generated within the battery casing exert force on the inner surface of the flexible casing half to expand the same away from the sealing member to vent the casing.

3,597,283
PHOSPHATING SOLUTIONS FOR USE ON FERROUS METAL AND ZINC SURFACES
Charles T. Snee, Willoughby, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Filed Oct. 8, 1969, Ser. No. 864,875
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15Z 16 Claims

Aqueous phosphating solutions containing phosphate ion, zinc ion, nickel, cobalt or copper ion, magnesium ion, nitrite ion and one or both of fluoride and chloride ions are useful for producing microcrystalline phosphate coatings on both ferrous metal and zinc (e.g., galvanized) surfaces, especially when their use is preceded by a titanium phosphate treatment. The resulting coatings improve adhesion of siccative organic coatings to the metal.

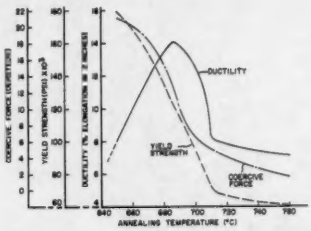
3,597,284
METHOD FOR OPERATING CHEMICAL PROCESSING SOLUTIONS
James F. Leland, Detroit, William S. Russell, Warren, and James G. Mabarak, Grosse Pointe, Mich., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed July 3, 1967, Ser. No. 650,844
The portion of the term of the patent subsequent to Dec. 2, 1986, has been disclaimed
Int. Cl. C23c *1/10*; C23f *7/00*
U.S. Cl. 148—6.16 5 Claims

A process for maintaining the optimum concentrations of coating and accelerating components in a metal treating bath wherein variations in the chemical consumption of these components is determined by measuring the coating rate of the treating solutions and then adjusting the addition of a replenishing material to compensate for changes in the chemical consumption of the coating and accelerating components. The coating rate is measured in a separate coating cell using a test specimen and the rate at which coating of the test specimen is effected is correlated to the actual rate at which coating of the metal surface being treated is effected. In this manner, destructive testing of the actual metal surfaces being treated is eliminated. The coating rate cell used is a box-like structure having means for positioning the test specimen within the cell. Means are provided for introducing the coating solution into the cell and distributing it so as to obtain a substantially uniform solution flow over the surfaces of the test specimen.

3,597,285
FLUX FOR USE IN SOLDERING OF STAINLESS STEELS
Lester Aronberg, Chicago, Ill., assignor to Lake Chemical Co., Chicago, Ill.
No Drawing. Filed May 2, 1969, Ser. No. 821,482
Int. Cl. C23c *1/12*
U.S. Cl. 148—26 16 Claims

Fluxes for use in soldering stainless steels comprising compositions containing a major proportion of orthophosphoric acid and a minor proportion of (a) finely divided metallic copper, or (b) a copper salt, suchs as copper phosphate, which is soluble in orthophosphoric acid, advantageously in admixture with various supplemental materials.

3,597,286
METHOD OF TREATING A HIGH STRENGTH HIGH DUCTILITY IRON-COBALT ALLOY
Donald R. Thornburg, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 23, 1968, Ser. No. 707,775
Int. Cl. H01f *1/16*
U.S. Cl. 148—120 7 Claims



Cold rolled iron-cobalt-vanadium soft magnetic alloy strip is annealed under carefully controlled conditions

to produce a partially recrystallized grain structure; the alloy strip then having good strength and high ductility coupled with good magnetic properties as evidenced by a magnetic induction (B_{250}) of more than 22,000 gauss.

3,597,287
LOW CAPACITANCE FIELD EFFECT TRANSISTOR
Ronald L. Koepp, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.
Original application Nov. 16, 1965, Ser. No. 508,027, now Patent No. 3,443,172, dated May 6, 1969. Divided and this application Aug. 27, 1968, Ser. No. 775,215
Int. Cl. H01l 7/34
U.S. Cl. 148—187 14 Claims

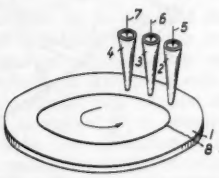
A method of making a field effect transistor by

(a) removing a portion of material from a first type conductivity semiconductor substrate to form a continuous groove in the first surface of the substrate,
(b) diffusing an impurity into the first surface at selected areas to form, beneath and extending to the surface, an opposite type conductivity region of desired thickness contiguous with the surface of the groove and extending in a channel configuration across the surface area surrounded by the groove,
(c) forming a layer of silicon dioxide on the first surface extending down into said groove and forming a thick layer of structural material over the silicon dioxide layer,
(d) removing portions of the semiconductor material to form a second surface having a plane which interacts the silicon dioxide layer at the bottom of the groove,
(e) diffusing an impurity into the second surface at selected areas thereof to form an opposite conductivity channel extending parallel to the first channel configuration and terminating on both ends at the positions where the plane of the second surface interacts the silicon dioxide layer.

3,597,288
EXPLOSIVE CONTAINING NITROCELLULOSE COATED WITH AN ALKYLATED DIPHENYL AMINE AND PREPARATION THEREOF
Frederic C. Merriam, Danvers, Mass., assignor to USM Corporation, Boston, Mass.
No Drawing. Filed May 15, 1969, Ser. No. 825,033
Int. Cl. C06b 19/02
U.S. Cl. 149—11 11 Claims

Nitrocellulose explosive charges are provided with improved moisture resistance by treatment with an alkylated diphenyl amine.

3,597,289
METHOD OF ETCHING A SEMICONDUCTOR BODY
Günter Köhl, Konigstein, Taunus, and Werner Heidrich, Frankfurt am Main, Sossenheim, Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany
Filed Jan. 19, 1967, Ser. No. 610,375
Int. Cl. H01l 7/50; C23f 17/00
U.S. Cl. 156—17 7 Claims

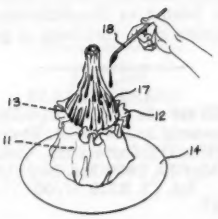


A semiconductor body is etched by applying a continuous stream of etching fluid, a continuous stream of rinsing fluid, and a continuous stream of gas to the semiconductor body from three spaced nozzles while the semiconductor body is repeatedly moved past the nozzles.

3,597,290
METHOD FOR CHEMICALLY DISSOLVING METAL
Akira Naito, Tokyo, Yukiya Masuda, Urawa-shi, Shigeo Osawa, Tokyo, Ryozo Kato, Iruma-gun, Saitama-ken, and Kazuo Motegi, Tokyo, Japan, assignors to Mitsubishi Edogawa Kagaku Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Mar. 25, 1968, Ser. No. 715,580
Int. Cl. C23f 1/02; H05k 3/06; C09k 3/00
U.S. Cl. 156—18 6 Claims

The present invention provides a new and improved method for chemically dissolving metal, especially, copper. According to the invention, a solution containing acid, hydrogen peroxide and saturated lower aliphatic alcohol is used for dissolving metal, especially copper. Moreover, if either or both of a catalytic amount of a metal ion, which has lower oxidation potential than that of copper, and a nitrogen compound comprising a bonding group to metal is added to said solution, the present invention is more effectively performed.

3,597,291
DECORATING PROCESS
Jean S. Swaringen, Rte. 2, Box 445B, Fayetteville, N.C. 28301
Filed Sept. 22, 1967, Ser. No. 669,757
Int. Cl. F23d 3/16
U.S. Cl. 156—172 4 Claims

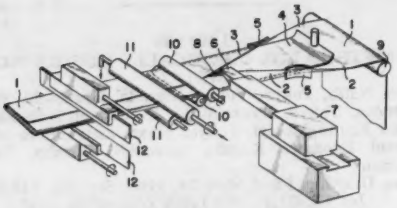


In abstract, a preferred embodiment of this invention is a method of decorating bottles, jars, lamps and similar articles with a coating resembling dripped candle wax. The method includes the brushing on of a base coat of melted wax followed by the dripping of a multiplicity of melted colored waxes to give the desired effect.

3,597,292
PROCESS FOR EFFECTING A BOND BETWEEN SYNTHETIC RESIN FIBER FABRICS AND AN APPARATUS THEREFOR
Shigekazu Takeda, Tokyo, Japan, assignor of a fractional part interest to Iwao Niwa, Kanagawa-ken, Japan
Filed June 28, 1967, Ser. No. 649,556
Claims priority, application Japan, July 4, 1966, 41/43,431; Sept. 8, 1966, 41/59,594
Int. Cl. B29d 23/10
U.S. Cl. 156—203 6 Claims

A process for binding the opposing brim portions of a thermoplastic resin fiber fabric to make the fabric into a cylindrical one which will subsequently be used mainly for the preparation of bags therefrom, or the brim portions of two or more of the fabrics to make a single larger fabric of the original ones, characterized in that the bonding is effected by using as a binder the same resin in a

molten state as the fabric and the assembly is immediately cooled, while pressing the brim positions together. The

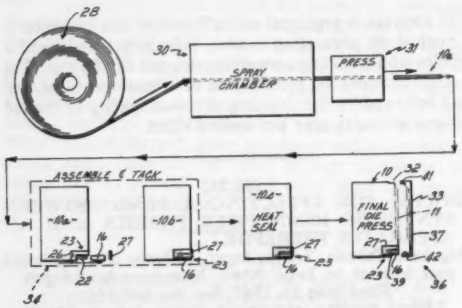


apparatus comprises feed means for the molten binder, cooling means and means for pressing the brim portions together.

3,597,293
METHOD OF MAKING LAMINATED MOLDED RESINOUS PRINTING PLATES
John A. Willett, Wellesley, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.
Continuation-in-part of application Ser. No. 573,636, Aug. 19, 1966. This application Oct. 8, 1969, Ser. No. 864,857
Int. Cl. B29c *19/00*
U.S. Cl. 156—245 **3 Claims**

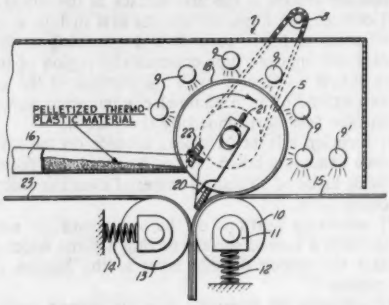
Printing plates exhibiting minimal thermal shrinkage are made by molding a laminar printing plate blank against a matrix. The working face (the top lamination) contains carbon black or a conductive substance, and is substantially thinner than the supporting lamination usually formed of the same resin but containing no conductive substance. Molding preferably takes place in a chamber at reduced atmospheric pressure. Heating is accomplished by high frequency electric current. Since only the face can be heated in the dielectric field and the thicker base remains cool, shrinkage is greatly reduced.

3,597,294
METHOD OF CARD MANUFACTURE
Daniel J. Bandenburg and Paul A. Robert, Cincinnati, Ohio, assignors to OK Partnership, Cincinnati, Ohio
Filed May 19, 1969, Ser. No. 825,545
Int. Cl. B32b *31/00*
U.S. Cl. 156—267 **14 Claims**



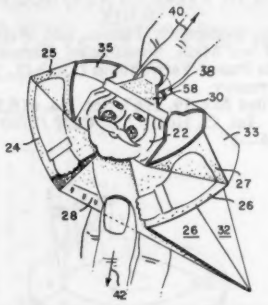
The method of manufacturing edge notchable cards having ferromagnetic implants for use in automatic data retrieval apparatus. The cards are first died out to form a generally rectangular card blank having a notched out corner with two coined bands along its edges. A ferromagnetic chip is inserted in the notch and is tacked in place by a loop of heat sealable tape which partially covers the chip and lies in the coined areas. The tape is then heat sealed to firmly bond it to the chip and card. The card is then died again with a portion of the chip, front card edge and rear card edge being removed and the entire coding edge formed including spaced teeth and a locking notch. The coding edge of the card is then impregnated with a polyester resin.

3,597,295
MACHINE FOR COATING TRAVELING SUBSTRATE WITH THERMOPLASTIC MATERIAL
David A. Tenquist and Vernon K. Quarve, Minneapolis, Minn., assignors to Possis Machine Corporation, Minneapolis, Minn.
Filed Feb. 3, 1969, Ser. No. 795,885
Int. Cl. B29b *3/02*
U.S. Cl. 156—501 **2 Claims**



A heated drum constrained to rotate about a horizontal axis has thermoplastic material in the solid state fed to an upwardly traveling portion of its surface, whereupon the thermoplastic material is converted into a hot melt which adheres to the drum surface. A roller below the drum supports a substrate web and presses the same against the coated underside of the drum just ahead of a scraper blade which removes the material from the drum. A second roller presses a backing sheet against the freshly coated substrate as the latter travels over its supporting roller.

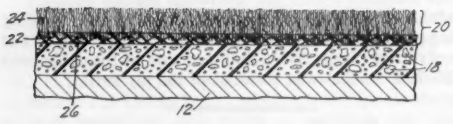
3,597,296
COLLAPSIBLE DECORATIVE PUPPET
Harold Lewis, 125 McClenaghan Mill Road, Wynnewood, Pa. 19096
Filed June 15, 1967, Ser. No. 646,391
Int. Cl. A63h *3/08, 3/10*
U.S. Cl. 161—14 **6 Claims**



A decorative puppet having a collapsible front and rear panel. The panels are connected together so that the puppet has a pair of stable positions. The front panel also

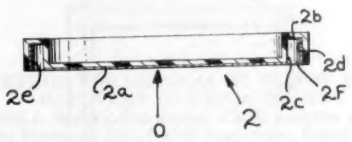
includes portions which are covered in a first of the stable positions. The puppet is elevated in height when placed in the other of the stable positions. The covered portions are exposed when the puppet is in the elevated position.

3,597,297
SYNTHETIC TURF MATERIAL AND METHOD OF MAKING SAME
Theodore Buchholtz, Maplewood Village, Timothy B. Jensen, Richfield, and William H. Penney, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed June 25, 1968, Ser. No. 739,788
Int. Cl. A41g *1/00*
U.S. Cl. 161—21 10 Claims



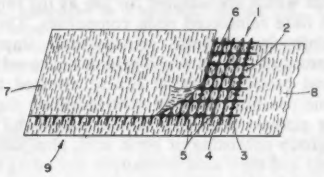
Turf-like surfacing formed from soft elastomeric base layer adhered to rigid substrate formed from 100% solids polyurethane having Shore A2 hardness of between 5 and 404 and containing 15 to 75% by volume of voids, the major portion of which are in the 1/16 to 1/4 diameter range and top surface of tough pile fabric adhered by means of adhesive which penetrates the back of said fabric and embeds the lower portion of the fibers therein, the base layer providing both viscous and elastic response to compression and being capable of slow recovery from indentation over a 2- to 20-second period.

3,597,298
THERMOFORMED PLASTIC CLOSURE AND METHOD OF MAKING SAME
Edward J. Stengle, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed May 13, 1968, Ser. No. 728,454
Int. Cl. B37b *1/04*
U.S. Cl. 161—42 13 Claims



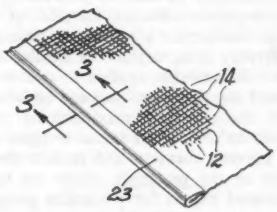
This invention relates to an improved closure for glass, paper, or plastic containers which can be economically produced by thermoforming operations upon a sheet of thermoplastic material. In accordance with the method of this invention, an annular band or film of an adhesive-forming material is applied to an annular surface of a thermoforming mold. The application of a thermoplastic sheet to the thermoforming mold concurrently results in the formation of the desired closure configuration and the transfer of the annular band of adhesive-forming material to the finished closure.

3,597,299
DISPOSABLE WASHCLOTH
Gordon D. Thomas and Jerome L. Schwoerer, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed July 3, 1968, Ser. No. 742,306
Int. Cl. B32b *23/02*
U.S. Cl. 161—57 7 Claims



A disposable washcloth having utility as a facecloth and characterized by a plurality of desirable physical properties for body washing including a degree of surface roughness. The roughness is occasioned by a structure which includes a scrim having creped threads bonded over their length between and to creped cellulose wadding layers; the creped threads of the scrim carry a thermoplastic adhesive and in the product such adhesive is present to some extent in the wadding layers as relatively rigid nuggets, protuberances or the like aiding in crepe retention and imparting to the outer cellulose layers the rugosity or roughness desired. The process of formation includes hot, and preferably dry, creping the composite of cellulose layers and adhesively treated scrim to provide a fine crepe in the product as a whole. This crepe is retained by the set thermoplastic adhesive at temperatures common to washcloth use.

3,597,300
ELASTIC FABRIC
Samuel E. Miller, Wilmette, Ill., assignor to Quick Service Textiles, Inc., Chicago, Ill.
Filed Nov. 21, 1968, Ser. No. 777,678
Int. Cl. D03d *15/08*
U.S. Cl. 161—77 1 Claim



Longitudinally stretchable textile fabric comprising comparatively rigid weft threads having a tendency to present sharp ends at the selvage or to become dislodged laterally. The warp threads are elastic. The ends of the weft are sealed with a narrow band of an elastomer having at least the same degree of stretch as the warp. In accordance with the method strips are formed from wider fabric without ravelling by first coating the whole width with a resin or the like to bind the warp and weft, then slitting into strips of the required width and treating the edges as aforesaid. Optionally the resinous or other binder may be removed following the edge treatment.

3,597,301
TREATMENT OF FIBROUS REINFORCING ELEMENTS

John R. Le Blanc, Wilbraham, Edward Lavin, Longmeadow, Albert H. Markhart, Wilbraham, and Irving Serlin, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

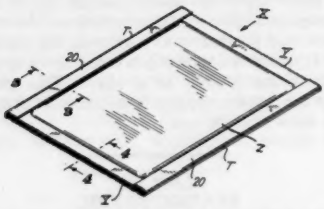
No Drawing. Filed Jan. 2, 1968, Ser. No. 694,840
Int. Cl. B32b 5/16, 17/10; C08j 1/36
U.S. Cl. 161—93 10 Claims

Disclosed herein are specially treated fibrous reinforcing elements which are adapted for use as the reinforcing element in fibre reinforced resin composites. The treated fibrous reinforcing elements provide resin impregnated fiber reinforced structures which exhibit improved thermal stability and prolonged useful life at elevated temperatures. In the practice of the present invention the fibrous reinforcing element is treated with a compound selected from the group consisting of boric acid, phosphoric acid, sulfuric acid and their acid derivatives and esters and salts of the foregoing acids.

3,597,302
LAMINATED PAPER PROTECTOR STRUCTURE

George Gerard, Point Pleasant, N.J., assignor to Jiffy Manufacturing Co., Hillside, N.J.

Filed Oct. 19, 1967, Ser. No. 676,575
Int. Cl. B32b 3/04; B65d 65/38, 65/44
U.S. Cl. 161—105 4 Claims



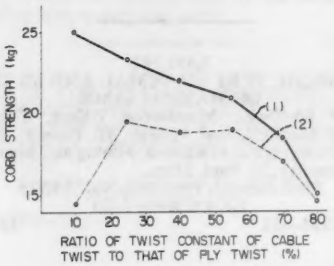
The disclosure sets forth a laminated paper structure having a fibrous filler enclosed between a plurality, and desirably two, sheets of a relatively strong paper stock, between which paper waste or fibrous materials are inserted to give a cushioned effect. The paper waste or fibrous material may be held in position by means of a flexible thermoplastic adhesive material of resinous nature, such as thermoplastic polymeric resinous adhesive, or less preferably glue, asphalt or similar adhesive materials, which is desirably applied to one or both of the inside faces of the envelope, package or laminated sheet. The side of the enclosure may also be provided with relatively thin soft sheets of tissue or light weight paper which will prevent abrasion and protect the contents of the envelope or the materials which are to be covered by the laminated papers for protection purposes.

3,597,303
RADIAL-PLY PNEUMATIC TIRE COVER

Hiroshi Tanaka, Nishinomiya, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan

Filed July 22, 1968, Ser. No. 746,432
Claims priority, application Japan, July 28, 1967, 42/48,516
Int. Cl. B29h 9/04, 17/28; B60c 9/04, 11/00
U.S. Cl. 161—144 4 Claims

Improved radial-ply pneumatic tire cover having the breaker, characterized: (i) that the said cords are made of yarns from polyvinyl alcohol containing not more than 2 mol percent of 1,2-glycol linkage and of a degree of polymerization of not less than 1,200, the cords being formed by twisting the said yarns which have a tenacity of at least 8 g./d., an elongation of 4–10%, and an initial



modulus of at least 150 g./d., and (ii) the said twisting being performed to such a degree that the twist constant of the ply twist ranges 300–1,200, and that of the cable twist is 25–70% of the twist constant of the ply twist.

3,597,304
DYEING OF CELLULOSIC FIBERS WITH CATIONIC DYE AND MONTMORILLONITE CLAY AND RESULTING PRODUCT

William S. Baldwin, Minneapolis, and James L. Keen, New Brighton, Minn., assignors to General Mills, Inc.

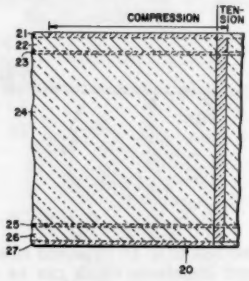
No Drawing. Filed Mar. 25, 1968, Ser. No. 715,548
Int. Cl. D21h 3/80
U.S. Cl. 162—162 13 Claims

Cellulosic fibers are dyed by treatment with an aqueous solution of a cationic dye such as Methyl Violet and an alkali metal or acid montmorillonite clay, such as bentonite. The bentonite clay increases the retention of the cationic dye onto the fibers.

3,597,305
SUBSURFACE FORTIFIED GLASS OR GLASS-CERAMIC LAMINATES

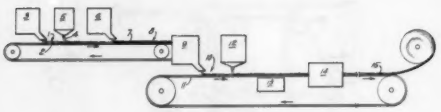
James W. Giffen, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 6, 1968, Ser. No. 735,115
Int. Cl. B32b 7/02, 17/06
U.S. Cl. 161—165 5 Claims



This invention relates to high strength glass, glass-ceramic, or glass and glass-ceramic laminates having subsurface fortification whereby a crack resulting from the fracture of an outer compressively stressed layer of the laminate is prevented from propagating throughout the entire cross section of the laminate by a subsurface fortification comprising at least one internal compressively stressed layer.

3,597,306
NONWOVEN FABRIC FORMED PREDOMINANTLY OF SHORT LENGTH CELLULOSE FIBERS
Frederick K. Mesek and John S. Andrews, Downers Grove, and Frank J. Fillwalk, Oak Lawn, Ill., assignors to Johnson & Johnson
Filed Feb. 9, 1968, Ser. No. 704,422
Int. Cl. B32b *5/16*
U.S. Cl. 161—170 6 Claims



Through bonded nonwoven fabrics are disclosed which, based on the weight of fibrous material, consist of at least 80% by weight of cellulosic fibrous material of less than textile length. Of this short length cellulosic fibrous material, at least 15% and up to 50% by weight is particulate in nature. The fabrics have a minimum wet tensile strength of 0.61 pound per inch width, a minimum dry tensile strength of 1.35 pounds per inch width and a maximum stiffness of 7.0 cm.

3,597,307
SUPPLE SHEET MATERIAL AND METHOD OF PRODUCING SAME
Pieter Paulusma, Arnhem, Netherlands, assignor to Algemene Kunstzijde Unie N.V., Arnhem, Netherlands
No Drawing. Filed Jan. 27, 1969, Ser. No. 794,404
Claims priority, application Netherlands, Feb. 9, 1968, 6801826
Int. Cl. D04h *1/04, 3/14*
U.S. Cl. 161—170 8 Claims

A supple sheet material suitable as a base material for the manufacture of artificial leather comprising a nonwoven condensed web formed from fibers of substantially hydrophilic material, e.g., polyvinyl alcohol, and a polymer filler which has substantially no adhesion to the fibers, e.g., polyurethane. The filler is homogeneously distributed throughout the web and coheres at spaces between the fibers and the sheet material has a density of at least 0.5 gram per cubic centimeter at a total filler content of not more than 30% by weight, based on the weight of the sheet material. Also a method for producing this sheet material is disclosed.

3,597,308
METHOD FOR DISPOSAL OF REFUSE AND RECOVERY OF BY-PRODUCTS
Frederick J. Brooks, San Rafael, Calif., assignor to Astrotronic Research, Ltd., North Vancouver, British Columbia, Canada
Filed Feb. 23, 1968, Ser. No. 707,810
Int. Cl. D21b *1/08, 1/32;* D21c *5/02*
U.S. Cl. 162—4 8 Claims

Refuse is immersed and agitated in water in a tank to segregate components by specific gravity. Light and heavy components are separately removed from the tank and separately processed. Medium weight components are primarily paper and fiber pulp stock. Such stock is purified, then processed into pulp board in a mill. Water drained from the mill is filtered and recycled. Combustible refuse is used as fuel to burn contaminated refuse and to produce steam from some of the water. The steam is used to clean certain components, to purify pulp stock, and to form "potable" water by condensation. Sludge settling from the tank, the filter and the burner is used for fertilizer. Many other useful by-products are recovered.

3,597,309
METHOD OF RECOVERING FIBROUS MATERIAL FROM A SCRAP OF A SHEET-LIKE FIBROUS STRUCTURE CONTAINING A POLYVINYL ALCOHOL RESIN BINDER TREATED WITH TITANIC ACID
Tadao Ashikaga and Shosuke Higashimori, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Japan
No Drawing. Filed Aug. 26, 1969, Ser. No. 853,190
Claims priority, application Japan, Aug. 30, 1968, 43/62,530
Int. Cl. D21c *5/02*
U.S. Cl. 162—6 9 Claims

A method of recovering fibrous material from a scrap of a sheet-like fibrous structure containing a polyvinyl alcohol binder treated with titanic acid, which comprises treating a sheet-like fibrous structure selected from papers and non-woven fabrics which have been formed by employing as binder a polyvinyl alcohol resin soluble in water of not over 95° C. and in which the polyvinyl alcohol resin binder has been treated with titanic acid, with an aqueous solution of a mineral acid containing hydrogen peroxide.

3,597,310
METHOD OF PRODUCING HIGH YIELD PULP BY DISC REFINING AT pH OF 12 TO 14
Yuichiro Sumi, Tokyo, Yukio Sawaguchi, Tokorozawa, and Makoto Nagata, Masayoshi Ninomiya, and Tadayoshi Nomura, Tokyo, Japan, assignors to The Kokusaku Pulp Industry Co., Ltd., Tokyo, Japan
No Drawing. Continuation-in-part of applications Ser. No. 633,067, Apr. 24, 1967, and Ser. No. 795,237, Jan. 31, 1969. This application Mar. 26, 1970, Ser. No. 23,064
Claims priority, application Japan, Apr. 25, 1966, 41/26,232; Jan 3, 1967, 42/1,308; Dec. 11, 1967, 42/79,078
Int. Cl. D21b *1/16*
U.S. Cl. 162—25 3 Claims

Bonding between the fibers in fiber bundles of high yield pulp produced by hot defibration becomes weakened and disrupted without causing any longitudinal splitting or transversal breaking of fibers, when the material is impregnated with an aqueous alkaline medium having a pH of from 12 to 14 and the impregnated material is subjected to compressive stress substantially perpendicular to the common direction of the fiber axes in the bundles and simultaneously to shearing stress substantially in that direction, said shearing stress being sufficient at least to loosen the bond between the fibers of the bundle. The treated material may thereafter be subjected to a conventional beater or refiner treatment so as to fibrillate the individual fibers completely, if necessary, and strong paper containing no fiber bundles can be made from the so treated material.

3,597,311
SEALING OF PAPER RIBBON PROJECTING EDGE PORTIONS ON WOODPULP INSULATED CONDUCTORS
Ludwik Jachimowicz, Elizabeth, Jerzy A. Olszewski, Bayonne, and Edwin W. Reasoner, Morristown, N.J., assignors to General Cable Corporation, New York, N.Y.
Filed May 16, 1968, Ser. No. 729,600
Int. Cl. D21d *3/00*
U.S. Cl. 162—106 11 Claims

Apparatus and process wherein an electrical conductor is passed through a cylindrical mold immersed in a tank of woodpulp, and the pulp is squeezed to remove excess water and to leave a ribbon of paper with the

conductor imbedded therein. The conductor is located off center in the pulp mass so that a greater width of paper ribbon projects from one side of the conductor than from the other. Water is applied to one paper ribbon or projecting edge to refloat some of the surface fibers of the paper so that they are held against the seam of the paper ribbon with a helical conformation during the wrapping operation, thus providing means for holding the seam closed. The projecting edge portions are then wrapped circumferentially and the longer edge portion overlaps the shorter edge portion. The finished insulation, therefore, has only one seam.

3,597,312

SYNTHETIC FIBROUS FILLER AND PAPER CONTAINING THE FILLER

Harry F. Kohne, Jr., Glenwood, and Frederick L. Kurrle, Laurel, Md., and Felipe S. Li, Old Bridge, N.J., assignors to Westvaco Corporation, New York, N.Y.

No Drawing. Filed May 7, 1969, Ser. No. 822,730
Int. Cl. C08f *45/02*; D21h *5/12*
U.S. Cl. 162—146 10 Claims

Synthetic, organic fibrous filler comprising blushed, fibrous polystyrene having high opacity as represented by scattering coefficients of at least about 0.25. The opaque, fibrous polystyrene is suitable for use as filler material in the manufacture of paper.

3,597,313

POLYALDEHYDE CROSSLINKED ALIPHATIC ALCOHOL RESINS AND A PROCESS OF MAKING TEMPORARY WET STRENGTH PAPER AND PAPER MADE THEREFROM

Laurence Lyman Williams, Stamford, and Anthony Thomas Coscia, South Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Sept. 23, 1968, Ser. No. 761,798
Int. Cl. D21h *3/44*; C08f *27/18*
U.S. Cl. 162—167 10 Claims

Wet-strength resins are provided which afford temporary wet strength to paper products. The resins are cationic polymers of unsaturated aliphatic alcohols reacted with polyaldehydes. They are prepared, for example, by cyanamide modification of polyvinyl alcohol polymers, followed by glyoxal cross-linking; or by copolymerization of vinyl acetate and diallyldimethylammonium chloride, followed by hydrolysis and glyoxal cross-linking. These resins are adsorbed on papermaking fibers in aqueous suspension during the papermaking process and impart temporary wet strength to resulting paper products such as tissue, paper towels and the like.

3,597,314

METHOD OF IMPROVING THE DRAINAGE OF CELLULOSE FIBER SUSPENSIONS WITH POLYMERS OF N-VINYL-N-METHYL-FORMAMIDE

Karlheinz Laube, Effretikon, Dieter Ulmschneider, Frankfurt am Main, and Ehrenfried Nischwith, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 27, 1968, Ser. No. 779,591
Claims priority, application Germany, Nov. 29, 1967, F 54,153
Int. Cl. D21d *3/00*; D21h *3/40*
U.S. Cl. 162—168 5 Claims

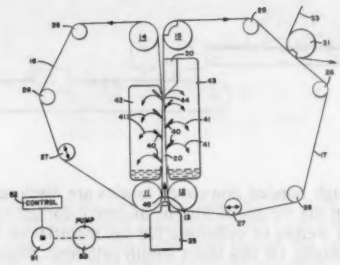
Dewatering of aqueous cellulose fiber suspension in the formation of paper is improved by adding to the suspension from 0.05 to 4% of a water soluble polymer consisting essentially of units derived from N-vinyl-N-methylformamide, such as N-vinyl-N-methyl formamide, having 60–100% of the formic acid radicals of the polymer split off by acid hydrolysis.

3,597,315

VERTICAL TWIN-WIRE PAPER MACHINE

Willard C. Notbohm and Paul M. Schaffrath, Watertown, N.Y., assignors to The Black Clawson Company, Hamilton, Ohio

Filed Oct. 30, 1968, Ser. No. 771,888
The portion of the term of the patent subsequent to May 11, 1988, has been disclaimed
Int. Cl. D21f *1/00*
U.S. Cl. 162—203 7 Claims



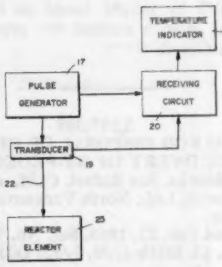
In a two-wire vertical paper machine, the opposed upwardly traveling reaches of the two wires are guided in converging relation to define a forming zone of predetermined dimensions, and a stock jet is discharged upwardly into this forming zone at a velocity sufficiently higher than wire speed to assure an upwardly directed pressure head on the liquid component of the stock substantially throughout the forming zone. The dimensions and direction of the stock jet are controlled such that the jet passes freely into the forming zone in spaced relation to each of the wires to impinge on the wires above the mouth of the forming zone defined between a pair of breast rolls.

3,597,316

NUCLEAR REACTOR THERMOMETRY

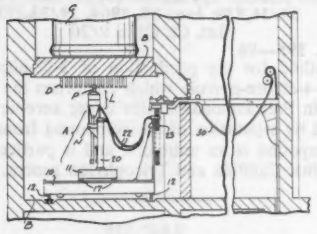
Lawrence C. Lynnworth, Waltham, Mass., assignor to Panametrics, Inc., New York, N.Y.

Filed Mar. 18, 1968, Ser. No. 713,889
Int. Cl. G21c *17/10*
U.S. Cl. 176—19 13 Claims



A system for measuring temperature inside a liquid cooled nuclear reactor by measuring the propagation of pulses of ultrasonic energy transmitted along elements of the reactor itself. The ultrasonic pulses may be transmitted along the cladding of the fuel elements, through the fissionable material or through the spacer wires surrounding each element. Since the propagation of the ultrasonic waves in a medium is a function of the temperature of the medium, this measured propagation indicates the temperature.

3,597,317
NUCLEAR REACTOR FUELLING MACHINE
Peter Isaac, Cooksville, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada
Filed Apr. 15, 1968, Ser. No. 721,409
Int. Cl. G21c *19/20*
U.S. Cl. 176—30 13 Claims



For inserting and extracting fuel aggregates into and from reactor fuel channels, the machine comprises a barrel for housing such a fuel aggregate and a free piston in the barrel adapted to be coupled to the fuel aggregate and to be reciprocated to displace the fuel aggregate into and out of the barrel. Displacement of the piston within the barrel is achieved by admitting pressure fluid at either end of the barrel. To indicate the position of the piston and thereby of the fuel aggregate within the barrel, a tape is attched at one end to the piston and at its other end is wound on to a reel, the rotational position of which is sensed by a potentiometer. The tape is kept tensioned by a torque generating device which acts on the reel and includes a spring tape having an inherent coiling tendency.

3,597,318
PRODUCTION OF DOUBLE STRANDED HIBONUCLEIC ACID
Elisabeth Sinclair Sutherland, Iver Heath, and Christine Joy Bessell, Stoke Poges, England, assignors to Glaxo Laboratories Limited, Greenford, England
No Drawing. Continuation-in-part of application Ser. No. 602,494, Dec. 19, 1966. This application Nov. 17, 1969, Ser. No. 877,519
Claims priority, application Great Britain, Dec. 19, 1966, 54,972/65
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 7 Claims

An antiviral substance active against both DNA and RNA viruses is produced by culturing a strain of *Penicillium chrysogenum* on a nutrient medium therefor, rupturing the cultured cells, fractionating the cell contents and recovering at least one double-stranded ribonucleic acid having a molecular weight of about 200,000 or greater.

3,597,319
PROCESS FOR THE PRODUCTION OF HELLEBRIGENIN
Otto Isaac, Bruchkobel, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed July 9, 1968, Ser. No. 743,298
Claims priority, application Germany, July 20, 1967, D 53,639
Int. Cl. C12d *13/00*
U.S. Cl. 195—32 6 Claims

Hellebrigenin is produced from hellebrin or desglucohellebrin by treatment with a cellulase derived from *Aspergillus niger*, followed, if desired, by chromatographic purification.

3,597,320
FERMENTATIVE ACETYLATION OF STEROIDAL 3β-OLS
Stephen Kraychy, Northbrook, and Seth S. Mizuba, Morton Grove, Ill., assignors to G. D. Searle & Co., Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 575,246, Aug. 26, 1966. This application Dec. 11, 1968, Ser. No. 783,127
Int. Cl. C07c *167/28*
U.S. Cl. 195—51 12 Claims

A process for acetylating steroidal 3β-ols by fermentation with Penicillium A.T.C.C. 16501 or Spicaria 20152 or 20153 is disclosed.

3,597,321
DIAGNOSTIC COMPOSITION FOR THE DIFFERENTIATION OF STAPHYLOCOCCI
Donald Paul Kronish, Rockaway, and Metka Prevorsek, Morristown, N.J., assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.
No Drawing. Filed Apr. 17, 1969, Ser. No. 817,188
Int. Cl. C12k *1/06*
U.S. Cl. 195—103.5 16 Claims

A diagnostic composition, and its use in the differentiation of staphylococci, is described. The composition comprises the combination of a bibulous material to which there has been applied two separate diagnostic agents, one of which detects mannitol fermentation and the other of which detects coagulase production. The agent which detects mannitol fermentation is a composition comprising (1) a nutrient capable of supporting the growth of microorganisms, or a combination of such nutrients, (2) D-mannitol, (3) a chemical indicator which changes color as mannitol is fermented to acid degradation products and, optionally, (4) sodium chloride and/or a thickener. The agent which detects coagulase production is a suitable coagulable material which is substantially free of glucose.

The diagnostic agents can be applied to the bibulous material as two separate zones, each zone preferably being separated by a zone of an inert, hydrophobic barrier. In the alternative, the bibulous material can be impregnated with the agent which detects mannitol fermentation, following which the agent which detects coagulase production can be superimposed thereon.

Growing organisms suspended in saline and incubated in contact with the diagnostic composition can be differentiated in a period of from about 4 to about 6 hours.

3,597,322
SUBSTRATE COMPOSITION FOR AMYLASE ASSAY
Arthur L. Babson, Morristown, N.J., assignor to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.
No Drawing. Continuation-in-part of application Ser. No. 521,814, Jan. 20, 1966. This application Oct. 28, 1968, Ser. No. 771,354
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 9 Claims

A soluble substrate for use in assaying amylase activity in such media as body fluids, plant extracts, and the like, is prepared by coupling in an aqueous alkaline solution a reactive dye with a starch or starch fraction, such as amylose or amylopectin and subjecting the product obtained to a gel filtration or dialysis treatment to remove all unreacted dye. A solution of the dyed substrate obtained is then buffered to a pH of from about 6.5 to about 7.8 and chloride ion for activation of the amylase is added.

Alternately, the substrate may be preserved by lyophilization and reconstituted with water at the time the assay is conducted. The assay is conducted by incubating an aqueous solution of the buffered chloride ion containing soluble substrate with a relatively small fluid sample under controlled time and temperature conditions; precipitating out the undigested dye substrate and any protein matter present in the fluid sample by the addition of alcohol or a solution of tannic acid in alcohol at a controlled pH and temperature; and measuring the optical density of the remaining clear supernatant liquid for the determination of amylase activity.

3,597,323

METHOD OF PURIFYING L-ASPARAGINASE

Joseph Roberts, Dallas, Tex., assignor to J. K. and Susie L. Wadley Research Institute and Blood Bank, Dallas, Tex.

No Drawing. Filed June 7, 1968, Ser. No. 735,195
Int. Cl. C07g 7/02
U.S. Cl. 195—66 17 Claims

A method of purifying L-Asparaginase from a mixture containing a ruptured microbial organism which yields L-Asparaginase by adding to the mixture a sufficient quantity of a water-miscible organic solvent, such as ethanol, to precipitate the cell walls of the organism and other undesirable constituents present in the mixture without precipitating the L-Asparaginase. The supernatant is then separated from the precipitated residue and the L-Asparaginase precipitated from the supernatant by adding more of the water-miscible organic solvent. The precipitate containing the L-Asparaginase is then separated from the supernatant, suspended in a suitable buffer, such as a potassium phosphate solution and chromatographically separated from the other constituents which precipitate with the L-Asparaginase. The chromatographic separation is preferably effected by sequentially eluting the L-Asparaginase from two columns, one of which contains an anion exchange resin and the other of which contains a cation exchange resin. The L-Asparaginase solution eluted from the first column is preferably collected, concentrated by the addition of the solution of a sufficient quantity of a water-miscible organic solvent, such as ethanol, and resuspended in a suitable buffer before admission to the second column.

Any residual endotoxin and pyrogen contained in the eluted L-Asparaginase containing solution from the second column are removed by admixture of a buffered solution (pH 6.8–6.9) containing re-concentrated L-Asparaginase with activated charcoal. The activated charcoal is then removed by filtration.

3,597,324

PREPARATION OF THE ANTIBIOTIC RIFAMYCIN SV

Giancarlo Lancini, Pavia, and Carlo Hengeller, Naples, Italy, assignors to Lepetit S.p.A.-Gruppo per la Ricerca Scientifica e la Produzione Chimica Farmaceutica, Milan, Italy

No Drawing. Filed July 12, 1968, Ser. No. 744,327
Claims priority, application Italy, July 13, 1967, 18,343/67
Int. Cl. C07d 9/00
U.S. Cl. 195—80 2 Claims

A process is described for preparing directly the antibiotic rifamycin SV by fermenting new mutants of strains of *Streptomyces mediterranei*.

Said antibiotic was up to now obtained through chemical transformations, starting from other rifamycins, such as rifamycin B.

3,597,325

PRODUCTION OF 3-(2-NITRO-3-CHLOROPHENYL)-4-CHLORO-PYRROLE

Kei Arima and Gakuzo Tamura, Tokyo, and Hiroshi Imanaka and Masanobu Kousaka, Ibaraki, Japan, and Akio Fukuda, Princeton, N.J., assignors to Fujisawa Pharmaceutical Co., Ltd.

No Drawing. Continuation-in-part of application Ser. No. 649,745, June 28, 1967, which is a continuation-in-part of application Ser. No. 440,747, Mar. 18, 1965. This application Aug. 12, 1968, Ser. No. 751,705
Claims priority, application Japan, Mar. 25, 1964, 39/16,338; June 12, 1964, 39/33,177
Int. Cl. C12d 9/20
U.S. Cl. 195—96 7 Claims

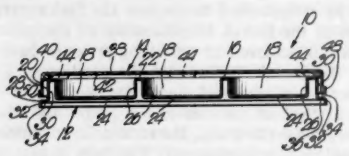
A method for the production of 3-(2-nitro-3-chlorophenyl)-4-chloro-pyrrole which comprises the cultivation of certain Pseudomonas strains under aerobic conditions followed by separation of the compound from the broth. The compound is an antibiotic and is particularly effective against Candida and Tricophyton genera.

3,597,326

MULTI-DISH LABORATORY UNIT

John Liner, Barkwood Drive, Woodbridge, Conn. 06525

Filed July 26, 1968, Ser. No. 747,935
Int. Cl. C12b 1/00
U.S. Cl. 195—139 10 Claims



Plastic multi-dish tray with removable plastic cover having spaced supports with which closed cover rests on top of tray with clearance between tray and cover for atmospheric exposure of multi-dishes, with tray and cover being of transparent plastic and having also circumferential depending base and cover skirts with similar clearance between them when cover closed, and base and cover skirts having at their respective bottoms vertically-spaced circumferential lips with outer coplanar surfaces for stick-on of tape to seal the multi-dishes from the atmosphere.

3,597,327

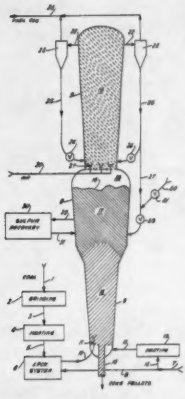
PROCESS FOR PYROLYZING A SOLID OR LIQUID HYDROCARBONACEOUS FUEL IN A FLUIDIZED BED

Arthur M. Squires, 245 W. 104th St., New York, N.Y. 10025

Continuation-in-part of application Ser. No. 561,551, June 29, 1966. This application Apr. 2, 1969, Ser. No. 812,786
Int. Cl. C01b 49/22
U.S. Cl. 201—12 12 Claims

A solid or liquid hydrocarbonaceous fuel, such as bituminous coal or residual oil, is charged to a lower zone of a fluidized bed, this zone comprising coke pellets, wherein the fuel is carbonized or cracked (i.e., pyrolyzed) to form gaseous products and a fresh coke accreting upon the pellets. The gaseous products fluidize a superposed, contiguous, upper zone of the fluidized bed, comprising a solid of smaller size and being fluidized at lower velocity. The velocity of the lower zone is sufficient to prevent the smaller solid from penetrating deeply into the zone. Heat is supplied to the lower zone by heat conduction from the upper zone. The heat is either generated within the upper zone (e.g., by combustion or other chemical reaction or by supply of a hot solid to the upper zone and withdrawal

of solid therefrom) or supplied thereto by indirect heat exchange from a heating medium. Alternatively, if the fuel carbonization or cracking is conducted in an atmosphere of hydrogen at a sufficiently high partial pressure,



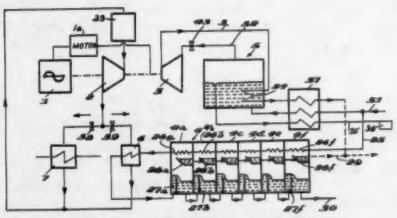
so that the reaction of the fuel is exothermic, heat is withdrawn from the lower zone by heat conduction to the upper zone, and the heat is removed from the upper zone, e.g., by indirect heat exchange to a cooling medium.

3,597,328

COMBINED PLANT INSTALLATION FOR PRODUCING ELECTRICAL POWER AND FRESH WATER FROM BRINE

Thomas Michels, Maisons-Laffitte, France, assignor to Compagnie Electro-Mecanique, Paris, France

Filed Nov. 7, 1968, Ser. No. 774,098
Claims priority, application France, Nov. 15, 1967, 128,266
Int. Cl. B01d *3/06, 3/10*
U.S. Cl. 202—173 **14 Claims**



Combined installation for the production of fresh water and electricity comprises an electrical generator unit which produces electric power from heat energy such as a steam turbine. The turbine also drives the compressor unit of a compression-evaporator producing fresh water from brine and the heat rejected by the electrical generator unit is utilized in an evaporator-distiller likewise producing fresh water from brine supplied to it.

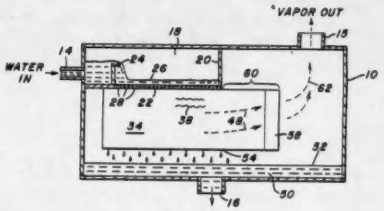
3,597,329

THIN FALLING FILM, WATER FLASHING DISTILLATION SYSTEM

Melvin H. Brown, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 7, 1969, Ser. No. 805,229
Int. Cl. B01d *3/06*
U.S. Cl. 203—11 **7 Claims**

A liquid such as water enters a chamber maintained at a pressure below its saturation pressure so that a portion of the feed liquid is flash evaporated and a portion discharged at a reduced temperature. The evaporation is effected by distributing the feed liquid over a plurality of parallel, closely spaced and substantially vertical surfaces upon which the liquid flows downwardly in falling



film-wise manner. Vapor is formed in the spaces between the vertical surfaces and is removed in a direction substantially transverse to the downward falling film flow. The vapor so produced exhibits a very low entrainment level.

3,597,330

RECOVERY OF EPSILON-CAPROLACTONE AND ALKANE DICARBOXYLIC ACID BY ACID TREATMENT AND VACUUM DISTILLATION

Anton Wegerich, Limburgerhof, Pfalz, Otto-Alfred Grosskinsky, Ludwigshafen (Rhine), Siegfried Winderl, Heidelberg, and Gerhard Blum, Limburgerhof, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 24, 1968, Ser. No. 723,937
Claims priority, application Germany, Apr. 27, 1967, P 16 18 143.4
Int. Cl. B01d *3/34*
U.S. Cl. 203—29 **4 Claims**

The recovery of epsilon caprolactone and of alkane dicarboxylic acids from mixtures such as are obtained in the individual washing steps of the process for oxidation of cyclohexane with air at elevated temperature and at superatmospheric pressure and containing substantially monocarboxylic acids, dicarboxylic acids and epsilon-hydroxycaproic acid (if desired after part of the adipic acid present has been separated) by removing water (if present) and the major portion of the monocarboxylic acids (if present) by distillation, adding 1 to 30% by weight of phosphoric acid or a compound forming the same or boric acid, heating the mixture obtained under subatmospheric pressure at 180° to 250° C., distilling off the volatile components, condensing the individual fractions and rectifying and/or crystallizing the fractions. Distillation temperatures above 150° C. are avoided. Epsilon caprolactone is useful for the production of caprolactam, a starting material for the production of fibers.

3,597,331

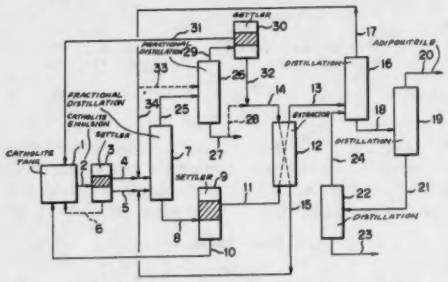
PROCESS FOR THE RECOVERY OF ADIPONITRILE FROM AN ELECTROLYTIC HYDRODIMERIZATION BY DIRECTLY DISTILLING THE CATHOLYTE EMULSION

Shinsaku Ogawa and Shoichiro Kumazaki, Yokohama-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 7, 1967, Ser. No. 681,203
Claims priority, application Japan, Nov. 16, 1966, 41/75,086
Int. Cl. B02k *1/00;* **C07c** *121/20*
U.S. Cl. 203—43 **20 Claims**

The recovery of adiponitrile from a catholyte emulsion used in the electrolytic hydrodimerization of acrylonitrile which has an oil phase, a continuous aqueous phase, and a supporting electrolyte salt by distilling a

mixture of the oil phase and aqueous phase from the catholyte emulsion to thereby distill off acrylonitrile and water, separating the remaining distillation bottom into an oil phase and aqueous phase and recovering adiponitrile from the separated oil phase. The catholyte emulsion may be directly subjected to the distillation treatment or may first be separated into an oil phase and aqueous phase with the separated oil phase and a portion of the aqueous phase distilled together. The adiponitrile is preferably recovered from the oil phase by distilling off the



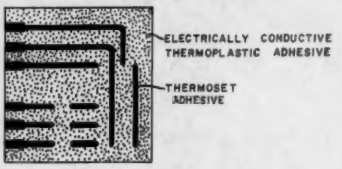
lower boiling components, and most preferably subjected to an aqueous extraction to remove supporting electrolyte salt prior to this distillation. The adiponitrile may be further purified utilizing a rectifying tower with the bottoms from this tower being recycled through a stripper back to the distillation of the lower boiling components. The distillate from the initial distillation of the oil phase and aqueous phase mixture may be recycled directly or after further treatment including, for example, a propionitrile rectification or such rectification followed by phase separation by cooling.

3,597,332
ELECTROLYTIC RECORDING SYSTEMS
Robert D. Richards, Chatham Township, N.J., assignor to Muirhead Limited, Beckenham, Kent, England
No Drawing. Filed Oct. 31, 1968, Ser. No. 772,430
Claims priority, application Great Britain, Nov. 6, 1967, 50,368/67
Int. Cl. B41m *5/20*
U.S. Cl. 204—2 **13 Claims**

The invention provides a process of electrolytic recording in which an electric current is passed between an anode containing metallic silver and an inert cathode through a porous web impregnated with an electrolytic conducting disclosure to precipitate metallic silver in such web and in which said anode also contains a second metal selected from magnesium, manganese, zinc, cadmium, nickel and aluminium and/or said solution a soluble salt of said second metal.

3,597,333
PROCESS FOR SIMULTANEOUSLY ELECTROPLATING DISCRETE AREAS OF AN INSULATIVE SUBSTRATE
Frank W. Kulesza, 3 Grant Road, Winchester, Mass. 01890
Filed Aug. 21, 1969, Ser. No. 851,816
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **5 Claims**

The process permits the simultaneous electroplating of a plurality of discrete areas of a substrate that is either a non-conductor or a poor electrical conductor. In the process, an electrically conductive thermosetting adhesive in the uncured state is deposited upon the discrete areas to be plated and the adhesive is then cured to cause it to become infusible and insoluble. An electrically conductive thermoplastic adhesive is spread upon the substrate to provide an electrical path from each discrete area to a common terminal. The electrically conductive areas that are not to be plated are covered with a plating resist.

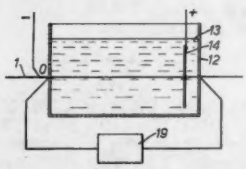


The substrate is then immersed in a plating bath with one of the electrodes connected to the common terminal and the exposed electrically conductive areas are simultaneously electroplated to the desired thickness of plate. Subsequently, the plating resist is removed to uncover the thermoplastic adhesive and the thermoplastic adhesive is dissolved with a solvent which does not affect the thermoset adhesive.

3,597,334
ELECTROPLATED VINYL CHLORIDE GRAFT COPOLYMER
Gunther Bernhardt, Hangelar, Robert Buning, Ilse-Ursula Nebel, and Egon Bierwirth, Oberlar, and Werner Trautvetter, Spich, Germany, assignors to Dynamit Nobel AG, Troisdorf, Bezirk Cologne, Germany
No Drawing. Continuation-in-part of application Ser. No. 754,454, Aug. 21, 1968. This application Oct. 3, 1968, Ser. No. 764,971
Int. Cl. C23b *5/60*
U.S. Cl. 204—20 **5 Claims**

An electroplated product conprising a graft copolymer of vinyl chloride on a conjugated diene backbone. The copolymer is first sensitized with stannous chloride, then chemically plated with metal and then electroplated.

3,597,335
METHOD FOR MANUFACTURING LOGICAL DEVICES
John Humpage and David C. Stapleton, Ilford, England, assignors to The Plessey Company Limited, Ilford, England
Filed Dec. 15, 1967, Ser. No. 690,963
Claims priority, application Great Britain, Dec. 24, 1966, 57,867/66
Int. Cl. C23b *5/58, 5/32;* B01k *3/00*
U.S. Cl. 204—28 **7 Claims**



A method of depositing a thin magnetic layer on a wire for constructing a logical device such as a memory matrix. The method comprises electrodepositing the layer in

a continuous process under conditions which give a uniform deposit and it may employ a superimposed alternating current to give a preferred direction of magnetisation in the deposited layer.

3,597,336

ELECTROPLATING PLASTICS

James A. Shotton, Bartlesville, Okla., and Jimmy S. Dew, Texas City, Tex., assignors to Phillips Petroleum Company

No Drawing. Filed Apr. 22, 1968, Ser. No. 723,262
Int. Cl. C23b 5/64
U.S. Cl. 204—30 10 Claims

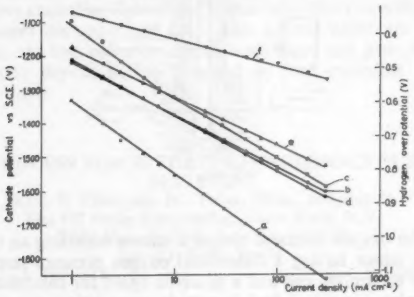
Electroplating of a moldable plastic, with or without an inert filler therein, is achieved by conditioning a preformed article of said plastic by a combination treatment consisting of an acid chromate etch and a persulfate treatment. The resulting conditioned article is thereafter plated by preplating with an electrolessly platable metal followed by electroplating the preplated article with a final finish to obtain a metal-plated plastic product.

3,597,337

BIPOLAR CELLS FOR THE ELECTROLYTIC PRODUCTION OF HALOGENATES

Milan M. Jaksic, Branislav Nikolich, and Dusan M. Karanovic, Belgrade, Yugoslavia, assignors to Institut Za Hemijska, Tehnoloska i Metalurska Istrazivanja, Belgrade, Yugoslavia

Filed June 12, 1968, Ser. No. 736,503
Claims priority, application Yugoslavia, Dec. 16, 1967, P 2,457/67
Int. Cl. B01k 1/00, 3/06; C01b 11/26
U.S. Cl. 204—45 2 Claims



To improve bipolar cells for the electrolytic production of halogenates, a metal such as chromium and molybdenum is deposited on the cathode surfaces of the graphite electrodes of the cells whereby there results a reduction in required cell voltage and power consumption.

3,597,338

METHOD AND ELECTROLYTE FOR ANODIC OXIDATION COATING OF ALUMINUM

Shin Matsuyama and Takekuni Kobayashi, Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha Minamiku, Osaka, Japan

No Drawing. Filed July 15, 1969, Ser. No. 842,030
Claims priority, application Japan, Jan. 17, 1969, 44/3,522
Int. Cl. C23b 9/02
U.S. Cl. 204—58 6 Claims

In the anodic oxidation coating of aluminum and its alloys an electrolyte is employed comprising an aqueous solution containing, by weight of said solution, 1% to 30% acetamide, 0.1% to 10% oxalic acid and 0.01% to 0.5% sulphuric acid or its molal equivalent of a water soluble sulphate compound. Deeper colors are achieved at lower voltages and power consumptions.

3,597,339

PROCESS FOR ANODIZING ALUMINUM AND ITS ALLOYS

Frederick S. Newman, Canoga Park, John R. Thorne, Hidden Hills, and John T. Hartman, Reseda, Calif., assignors to Scionics of California, Inc.

Filed Sept. 9, 1968, Ser. No. 758,258
Int. Cl. C23b 9/02; B01k 3/00
U.S. Cl. 204—58 12 Claims

An anodizing system uses both positive and negative current pulses. Such pulses are adjustable to achieve different adjusted values of positive and negative currents. These values are sensed and used to maintain automatically such values. The ratio of negative current to positive current is preferably greater than 3% for the production of relatively thick, dyeable, hard anodized coatings and conventional (normal) anodic coatings of light shades of integral colors using a simple sulfuric acid bath which may be maintained at relatively high temperatures. Current may be applied at nearly full current density initially without burning. In some cases, additional means may be provided to increase the throwing power by eliminating the negative current and using means such as capacitors or inductors to prolong the decay of the positive pulses, preferably such that the then composite positive pulses are maintained above a zero value. These composite positive pulses are maintained in a ratio and wave shape which yields both good "throwing" power and high quality, even coatings, and produces the anodic coatings at relatively high current densities.

3,597,340

RECOVERY OF LITHIUM AS $LiOH.H_2O$ FROM AQUEOUS CHLORIDE BRINES CONTAINING LITHIUM CHLORIDE AND SODIUM CHLORIDE

Sammy C. Honeycutt and Ricardo O. Bach, Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.

No Drawing. Filed Nov. 5, 1968, Ser. No. 773,666
Int. Cl. C01d 1/06
U.S. Cl. 204—98 5 Claims

Recovery of lithium as $LiOH.H_2O$ from aqueous chloride feed brines containing LiCl and NaCl by electrolyzing said brines in a diaphragm cell, separating the solids from the electrolyzed brine, said solids comprising predominately $LiOH.H_2O$, and recrystallizing said $LiOH.H_2O$ to effect purification thereof.

3,597,341

SELECTIVE ADDITION OF THIOLS TO ALLYLIC ISOCYANATES AND ISOTHIOCYANATES

Alexis A. Oswald, Mountainside, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Sept. 11, 1968, Ser. No. 759,200
Int. Cl. B01j 1/10; C07c 119/04, 161/04
U.S. Cl. 204—158 11 Claims

Thiols can be added to the olefinic bond of allyl isocyanates and isothiocyanates to form the corresponding anti-Markovnikov type adducts. The resulting products are useful as pesticides, especially as post-emergence herbicides, and as polymer intermediates.

3,597,342

METHOD FOR THE DRY CHLORINATION OF POLYVINYL CHLORIDE USING A LIQUID SWELLING AGENT

Mario De Vita, Matera, Pietro Pece, Macchia di Ferrandina, and Attilio Palvarini and Pietro Vaccari, Milan, Italy, assignors to Pozzi Ferrandina S.p.A. Ferrandina, Matera, Italy

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,531

Claims priority, application Italy, Apr. 1, 1967, 14,459/67

Int. Cl. C08d *1/00*; C08f *3/22*

U.S. Cl. 204—159.18 7 Claims

A method for preparing superchlorinate polyvinyl chloride is disclosed, in which the chlorination stage is performed by chlorinating a dry admixture of polyvinyl chloride and a fluid chlorination medium. Said fluid chlorination medium is a nonsolvent swelling agent for the starting polymer, and activation energy by UV irradiation is used to promote the chlorination reaction. Typical chlorination media are chlorinated hydrocarbons of the aliphatic series and mixtures thereof.

3,597,343

PHOTOPOLYMERIZATION OF ETHYLENICALLY UNSATURATED COMPOUNDS THROUGH THE USE OF NOVEL AZOLE PHOTOINITIATORS

Gerard Albert Delzenne, 's-Gravenwezel, and Urbain Leopold Laridon, Wilrijk, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium

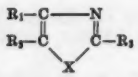
No Drawing. Filed Nov. 21, 1967, Ser. No. 684,611

Claims priority, application Great Britain, Dec. 8, 1966, 55,095/66

Int. Cl. C08d *1/00*; C08f *1/16*

U.S. Cl. 204—159.23 9 Claims

A process for photopolymerization of ethylenically unsaturated organic compounds is described which comprises irradiating a composition including a photopolymerizable ethylenically unsaturated organic compound and as a photopolymerization initiator an azole compound having the formula:



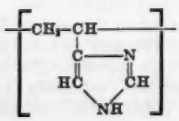
wherein:

X is oxygen, sulphur, —NH— or a —NR— group, wherein R is an alkyl group of 1 to 4 carbon atoms, or benzyl,

each of R_1 and R_2 (same or different) is hydrogen, halogen, an alkyl group of 1 to 4 carbon atoms, or a phenyl group, and

R_3 is hydrogen, halogen, an alkyl group of 1 to 4 carbon atoms, a phenyl group, a naphthyl group or a styryl group;

or an azole compound which comprises an imidazole group incorporated in a polymer comprising recurring units of the formula:



3,597,344

HIGH ENERGY RADIATION TREATMENT OF TALL OIL

Forrest N. Case, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed May 10, 1968, Ser. No. 728,333

Int. Cl. B01j *1/10*

U.S. Cl. 204—161HE 4 Claims

Highly energetic radiation has been found effective to reduce the Gardner color index of fatty acids derived from tall oil as well as other vegetable or animal sources. Additionally, the rate of crystallization of rosin acids is considerably inhibited by highly energized radiation.

3,597,345

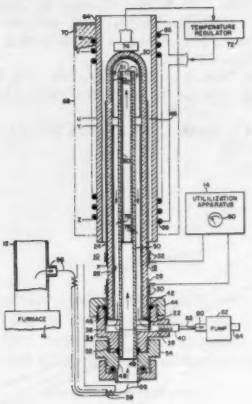
OXYGEN DETECTION APPARATUS

William M. Hickam, Pittsburgh, and John F. Zamaria, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 18, 1968, Ser. No. 776,637

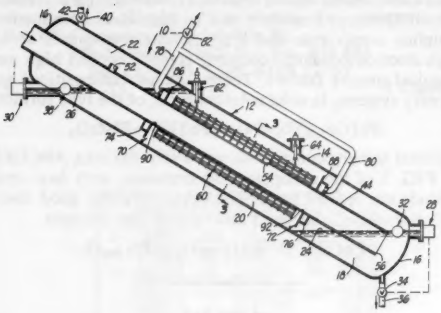
Int. Cl. G01n *27/46*

U.S. Cl. 204—195 12 Claims



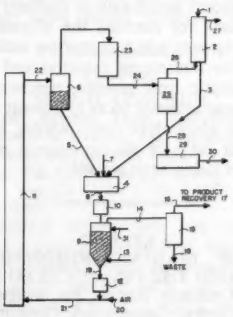
An oxygen detection system is shown including an oxygen sensor having a differential oxygen pressure responsive electrolyte cell and a catalytic agent for catalytically burning a residual fuel in sample gases before the gases reach the effective detection zone of the cell. The effective detecting zone occurs where two electrodes contact directly opposite sides of an electrolyte wall. A heater arrangement heats the regions of the detection zone and the catalytic agent to an effective operating temperature. The cell includes a tubular electrolyte member having respective open and closed opposite ends. A gas entry tube extends into the bore of the electrolyte member thereby forming a concentric space therebetween. The inner surface of the entry tube and the inner surface of the closed end of the electrolyte member are comprised of a catalytic agent, so that sample gas entering the entry tube and doubling back through the space between the entry tube and the electrolyte member is exposed to an extensive area of heated catalytic agent before it reaches the effective detection zone. The detection system further includes a differential pressure pump connected to the sensor outlet through a capillary restriction, the inlet of the sensor being connected to a subatmospheric source of gas being sampled. The capillary restriction provides substantially constant gas flow rate.

3,597,346
INCLINED, ELECTRIC WET-OIL TREATER
Logan C. Waterman, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.
Filed May 7, 1969, Ser. No. 822,604
Int. Cl. B03c 5/02
U.S. Cl. 204—302 8 Claims



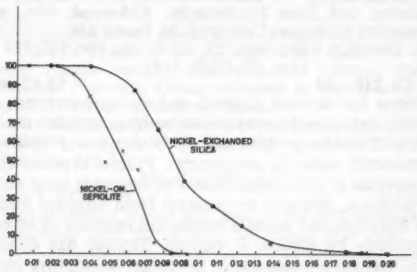
An inclined electric treater for water-in-oil dispersions. The treater includes: an inclined elongated container providing a water zone at its lower end, an elongated oil zone intermediate its ends and a gas zone at its upper end; a wet-oil inlet tube in and extending axially of the container and provided with a port for discharging wet oil into the annulus between the inlet tube and the container; a foraminous cylindrical electrode in the annulus between the inlet tube and the container and encircling the inlet tube so that there are electric fields between the electrode and the inlet tube as well as between the electrode and the container; and upper and lower annular dry-oil collectors encircling and carried by the inlet tube respectively adjacent the upper and lower ends of and within the oil zone, the two collectors facing each other and providing annular dry-oil outlets bounded by and encircling the inlet tube.

3,597,347
PROCESS FOR RETORTING CARBONACEOUS MATERIAL
Rex. T. Ellington, Jr., Tulsa, Okla., assignor to The Oil Shale Corporation, New York, N.Y.
Filed Dec. 6, 1968, Ser. No. 781,769
Int. Cl. C10b 53/06
U.S. Cl. 208—11 9 Claims



An improved process for retorting carbonaceous material, such as oil shale, where the heat of pyrolysis is supplied by mixing hot spent shale ash with raw shale feed. Shale particles lose their strength progressively above about 500° F. so crushing of the feed to minum ⅛ inch size does not take place until after mixing or retorting. Cold shale feed fines are added to the mixed hot shale ash and larger shale feed before retorting.

3,597,348
HYDROGENATION OR HYDROCRACKING WITH A NICKEL ON SILICA CATALYSTS
Kenneth Hugh Bourne, Knaphill, Woking, Christopher John Leonard Metcalfe, Sunbury, and Alan Richard Thornhill, Epsom, England, assignors to The British Petroleum Company Limited, London, England
Continuation of application Ser. No. 553,546, May 27, 1966. This application May 14, 1969, Ser. No. 859,530
Claims priority, application Great Britain, Jan. 12, 1966, 1,432/66
Int. Cl. C07c 5/02; C10g 13/02
U.S. Cl. 208—110 12 Claims



This invention relates to a process for the hydrogenation or hydrocracking of hydrocarbons using a Group VIII metal on a silica support prepared by an ion-exchange technique. The ion-exchange catalysts used in accordance with this invention are prepared by first exchanging hydrogen atoms on a dried silica support with alkaline cations, and then exchanging the alkaline cations with cations of a metal of Group VIII of the Periodic Table.

3,597,349
CATALYTIC COMPOSITION COMPRISING A PARTICULATE MIXTURE OF ULTRASTABLE ALUMINOSILICATE - CONTAINING SILICA-ALUMINA AND CATION-EXCHANGED Y-TYPE MOLECULAR SIEVES AND PROCESSES EMPLOYING SAME
Ralph J. Bertolacini, Chesterton, Harry M. Brennan, Hammond, and Louis C. Gutberlet, Crown Point, Ind., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Continuation-in-part of abandoned application Ser. No. 672,005, Oct. 2, 1967. This application Oct. 29, 1969, Ser. No. 872,400
Int. Cl. C10g 13/02
U.S. Cl. 208—111 28 Claims

The catalytic composition comprises a physical particulate mixture of a component (A) and a component (B). Component (A) comprises an amorphous silica-alumina support having dispersed uniformly through the matrix thereof an ultrastable, large-pore crystalline aluminosilicate material and having impregnated thereon a metal of Group VI–A, preferably molybdenum, and a metal of Group VIII, preferably cobalt; component (B) comprises Y-type molecular sieves which have been cation-exchanged with a Group VIII metal, preferably nickel. The processes are hydrocarbon-conversion processes employing this catalytic composition, particularly, a process for hydrocracking nitrogen-contaminated petroleum hydrocarbon fluids.

3,597,350
GEL FILTRATION PROCESS
Helmut Determann, Frankfurt am Main, and Theodor Wieland, Mainz, Germany, assignors to Pharmacia Fine Chemicals AB, Uppsala, Sweden
No Drawing. Continuation-in-part of application Ser. No. 750,003, Aug. 5, 1968. This application Nov. 12, 1968, Ser. No. 775,185
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 6 Claims

A gel filtration separating medium of grains of regenerated cellulose and a method of preparation are provided. The grains of regenerated cellulose contain water or a highly aqueous liquid, contain 2 to 25 gms. of cellulose per deciliter of grain volume, and have pore sizes mainly in the range of from 2 to 200 millimicrons.

3,597,351
PURIFICATION OF AQUEOUS MEDIA BY REMOVAL OF PHENOLIC AND METAL CONTAMINANTS THEREFROM
Kurt Landenburg, St. Louis, Bernard W. Weinrich, St. Charles, and John H. Johnson, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 27, 1968, Ser. No. 763,351
Int. Cl. C02b *1/46*
U.S. Cl. 210—32 12 Claims

Process for sorption removal and optional recovery of phenolic and/or metal contamination from aqueous media broadly. Provides purified effluent streams and recovery of potentially valuable components. Process involves specific sorption of said contaminants on insoluble basic polymer products, followed by removal from aqueous media as by filtration, and permits subsequent recovery of sorbed components by elution if desired. Process has diverse utility, including treatment of beverages to improve quality, treatment of leather industry waste for sorption including optional recovery for reuse of tannins, treatment of papermill waste water for sorption of tannins, et cetera, with concurrent alleviation of waste-disposal problems where such exist.

3,597,352
SCALE INHIBITORS
James R. Stanford and Paul G. Vogelsang, Jr., Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed Nov. 2, 1967, Ser. No. 680,028
Int. Cl. C09k *3/00*; E21b *31/00*
U.S. Cl. 252—8.55 10 Claims

Phosphated surface active hydroxy amines obtained by reacting polyphosphoric acid and/or phosphorus pentoxide with surface active hydroxyamines, e.g., C_8 to C_{18} amines, with or without one or more hydroxy hydrocarbons, with or without neutralization, are used as scale inhibitors in brines, especially in oil wells, where calcium and barium salts are present.

3,597,353
4,5,6,7-TETRAHYDRO-BENZOTRIAZOLE AS METAL DEACTIVATOR
Donald Richard Randell, Stockport, Ernest Alfred Cox, Davyhulme, Urmston, and Alan Atkinson, Eaton, near Congleton, England, assignors to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Filed July 16, 1968, Ser. No. 745,116
Claims priority, application Great Britain, July 21, 1967, 33,535/67
Int. Cl. C08f *45/70*; C10m *1/32*
U.S. Cl. 252—50 17 Claims

The production of 4,5,6,7-tetrahydro-benzotriazole from benzotriazole by catalytic hydrogenation and the use of the tetrahydrobenzotriazole as corrosion-inhibiting agent in novel compositions containing the same in mixture with functional materials, especially mineral oil, and varnishes and lacquers based on white spirits, are described.

3,597,354
PIEZOELECTRIC CERAMIC COMPOSITIONS
Masamitsu Nishida, Osaka-shi, and Hiromu Ouchi, Toyonaka-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Aug. 21, 1967, Ser. No. 662,036
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 2 Claims

Piezoelectric ceramic compositions are provided which are characterized by high stability with temperature and time in resonant frequency and by high electromechanical coupling coefficients and high dielectric constants or by high electromechanical coupling coefficients and high mechanical quality factors. These ceramic compositions are ternary systems, in solid solution form, of the type formula

$$Pb(Co_{1/3}Nb_{2/3})O_3—PbTiO_3—PbZrO_3$$

Optimal ternary compounds are within the area ABCDEF of FIG. 2 of the accompanying drawings; very best compounds are defined by AGHIF. An especially good material consists of the solid solution of the formula

$$Pb(CO_{1/3}Nb_{2/3})_{0.125}Ti_{0.435}Zr_{0.440}O_3$$

3,597,355
HEAT TRANSFER PROCESS
Howard L. Hsu, Hickory Hills, Ill., assignor to Liquid Carbonic Corporation, Chicago, Ill.
No Drawing. Filed Oct. 16, 1969, Ser. No. 867,089
Int. Cl. C09k *3/00*
U.S. Cl. 252—73 4 Claims

Liquid heat transfer process employing monocyclic terpenes as the heat-exchange medium. Particularly useful for low temperature heat-exchange operations.

3,597,356
SPECULAR ELECTROLYTIC IRON CONTAINING FLUORESCENT PARAMAGNETIC PIGMENTS FOR FLAW DETECTION
David Diperstein, Glenside, and David P. Mason, Dresher, Pa., assignors to Testing Systems, Inc., Glenside, Pa.
No Drawing. Continuation-in-part of application Ser. No. 770,422, Oct. 24, 1968, which is a continuation-in-part of application Ser. No. 484,436, Sept. 1, 1965. This application Jan. 7, 1970, Ser. No. 1,300
Int. Cl. H01f *1/28*; G01n *27/82*; C09k *1/02*
U.S. Cl. 252—62.52 5 Claims

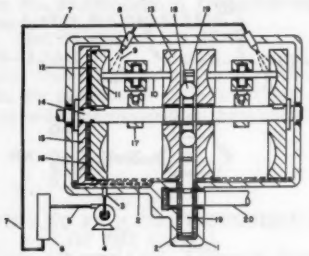
A fluorescent paramagnetic pigment consisting essentially of finely divided specular electrolytic iron powder coated with a fluorescent material consisting of a daylight fluorescent dyestuff in a resinous base, with the weight ratio of daylight fluorescent material to the electrolytic iron being between 1 to 1 and 1 to 100. A crack detector composition comprising a uniform dispersion of the aforesaid fluorescent paramagnetic pigment in a liquid vehicle. The method for forming the aforesaid fluorescent paramagnetic pigment which comprises uniformly mixing a solution of the fluorescent material and finely divided specular electrolytic iron powder, removing the solvent for the fluorescent material so as to deposit the fluorescent material on the electrolytic iron powder by evaporation with the weight ratio of the fluorescent material to the electrolytic iron being as aforesaid.

3,597,357
METHOD OF MAKING STRONTIUM-FERRITE MAGNETS AND THE PRODUCTS SO PRODUCED
Alexander W. Cochardt, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 19, 1968, Ser. No. 714,191
Int. Cl. C04b *32/26*
U.S. Cl. 252—62.63 24 Claims

A process is described for the production of strontium ferrite magnets employing hematite and celestite as the

starting materials. Data is included on the magnetic characteristics and the hysteresis properties of the finished material.

3,597,358
TRACTION DRIVE TRANSMISSION CONTAINING ADAMANTANE COMPOUNDS AS LUBRICANT
Irl N. Duling, West Chester, and David S. Gates, Swarthmore, Pa., Robert E. Moore, Wilmington, Del., and Frederick P. Glazier, Philadelphia, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
Filed Nov. 1, 1967, Ser. No. 679,801
Int. Cl. C09k *3/00*; F16h *15/08*
U.S. Cl. 252—73 **7 Claims**



A hydrocarbon base stock, useful as a lubricant for a traction drive transmission, comprises at least one C_{12}–C_{40} saturated adamantane compound, containing no elements other than carbon, hydrogen, fluorine, and oxygen, and where said oxygen is combined in an ether or an ester linkage.

3,597,359
FUNCTIONAL FLUID COMPOSITIONS
Terrill D. Smith, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Mar. 22, 1968, Ser. No. 715,175
Int. Cl. C23f *11/12*; C09k *3/00*; C10m *3/40*
U.S. Cl. 252—78 **17 Claims**

Compositions of the class which exhibit the ability to inhibit and control damage to mechanical members in contact with said compositions by the incorporation of a perfluorinated alkylene ether-containing compound having a degree of polymerization of from 1 to 50 into a class of base stocks representative of which are esters and amides of phosphorus, o-silicates and polysilicones. The compositions have many uses, among which are their use as hydraulic fluids.

3,597,360
SURGICAL SCRUB
Galen F. Collins, Bristol, Tenn., and Fred S. Barr and Charles F. Bullock, Bristol, Va., assignors to The S. E. Massengill Company, Bristol, Tenn.
No Drawing. Filed May 2, 1968, Ser. No. 726,215
Int. Cl. C11d *3/48, 3/50*
U.S. Cl. 252—106 **3 Claims**

Various chemical disinfectants can reduce bacterial colonization for a brief period of time. However even bisphenols of the hexachlorophene type and iodine when incorporated in scrubs remove only part of the transient bacteria. Other transient bacteria, along with resident bacteria, remain and multiply within a few hours, so that the bacterial flora builds back up. For hospital workers, it would, therefore, be desirable to have a more effective scrub product. The scrub contemplated herein is effective over a longer period than those now known.

3,597,361
METHOD OF PREPARING AGGLOMERATED DETERGENT COMPOSITION
Clark A. Sumner, Downey, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
Filed May 21, 1969, Ser. No. 826,341
Int. Cl. C11d *1/12*
U.S. Cl. 252—161 **13 Claims**

A method of producing agglomerates of dry detergent ingredients by charging particulate detergent ingredients into an agglomeration zone and maintaining a continuously falling curtain of said ingredients in said zone, contacting said particulate material in said falling curtain with a sodium salt of alkyl aryl sulfonic acid to agglomerate said particulate material, maintaining a tumbling bed of agglomerating ingredients at the base of said falling curtain and withdrawing agglomerated material from said agglomeration zone, said sodium salt of alkyl aryl sulfonic acid being prepared in situ by merging sprays of liquid caustic soda and alkyl aryl sulfonic acid.

3,597,362
GENERATION OF LIGHT BY THE REACTION OF ESTERS OF OXALIC-TYPE ACIDS
Laszlo Joseph Bollyky, Stamford, and Michael McKay Rauhut, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of application Ser. No. 491,896, Sept. 30, 1965. This application Feb. 28, 1967, Ser. No. 619,140
Int. Cl. C09k *3/00*
U.S. Cl. 252—186 **7 Claims**

This invention relates to a process for obtaining chemiluminescent light by reacting an oxalic-type ester with a hydroperoxide in the presence of a solvent and a fluorescent compound, and to compositions incorporating part or all of these materials for the process, and to articles incorporating such compositions.

3,597,363
MODIFIED URANIUM ACTIVATED BARIUM PYROPHOSPHATE PHOSPHORS
Frank J. Avella, Flushing, N.Y., assignor to General Telephone & Electronics Laboratories Incorporated
No Drawing. Continuation-in-part of application Ser. No. 683,478, Nov. 16, 1967. This application Apr. 7, 1969, Ser. No. 814,171
Int. Cl. C09k *1/30*
U.S. Cl. 252—301.1 **11 Claims**

Uranium activated barium pyrophosphate phosphors are disclosed in which magnesium, cadmium, calcium, strontium or zinc are substituted for part of the barium. These phosphors emit green light when excited by ultraviolet radiation, X-rays, cathode rays or ion bombardment and may be used for color correction in low, medium and high pressure mercury discharge lamps, in cathode ray tube screens and in devices for detecting and measuring the intensity of ion and X-ray radiation.

3,597,364
OPTICAL BRIGHTENING AND NEW COMPOSITIONS OF MATTER
Ichiro Okubo and Michihiro Tsujimoto, Tokyo, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
No Drawing. Continuation of application Ser. No. 772,873, June 14, 1968, which is a division of application Ser. No. 550,957, May 18, 1966, now Patent No. 3,400,124, which in turn is a continuation-in-part of applications Ser. No. 220,904, Aug. 31, 1962, now Patent No. 3.262,929, and Ser. No. 502,414, Oct. 22, 1965, now Patent No. 3,347,694. This application July 17, 1969, Ser. No. 847,512
Int. Cl. D06l *3/12*
U.S. Cl. 252—301.2W **6 Claims**

Optical brightening compositions and brightened products are disclosed involving the use of 2-styrylnaphthox-

azole and various styryl-substituted derivatives. The compositions are especially directed to improving fibers, fabrics, and the like.

3,597,365
PHOSPHOR

Harold Francis Ward, London, England, assignor to British Lighting Industries Limited, London, England

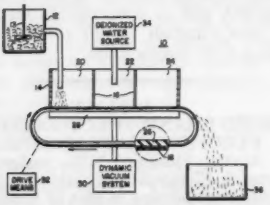
Filed Feb. 28, 1968, Ser. No. 709,064
Claims priority, application Great Britain, May 10, 1967, 21,676/67
Int. Cl. C09k *1/04*; C22b *59/00*
U.S. Cl. 252—301.4 13 Claims

A phosphor is produced by heating together trivalent cerium oxide and aluminium oxide to produce cerous aluminium oxide having the β-alumina crystal structure. For the production of a cerous manganese aluminium oxide phosphor, divalent manganese oxide may be included in the initial mixture or may be heated in admixture with the cerous aluminium oxide. In all cases any one or more of the oxides may be replaced at least partially by a compound which yields the oxide under the heating conditions.

3,597,366
HALOPHOSPHATE PHOSPHOR PROCESS

Eugene A. Graff, Cedar Grove, and Gilbert P. Mortensen, Livingston, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1968, Ser. No. 787,978
Int. Cl. C09k *1/36*
U.S. Cl. 252—301.4P 2 Claims



A method of processing halophosphate phosphor to improve the performance of a fluorescent lamp which incorporates the phosphor. The phosphor is acid washed and then separated from the washing solution by utilizing a dynamic vacuum in conjunction with a filter. Rinsing of the phosphor is similarly conducted until the pH of the rinse water is above a predetermined value to insure that substantially all acid is removed. This provides the dual beneficial effect of speeding up the phosphor processing and improving the performance of the lamps which incorporate the phosphor.

3,597,367
COORDINATION CATALYSTS FOR ALPHA-OLEFIN POLYMERIZATION

David Apotheker, Wilmington, Arthur L. Barney, Deerhurst, Wilmington, and Nicolas Brodoway, Claymont, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,553
Int. Cl. C08f *15/04*, *15/40*
U.S. Cl. 252—429 7 Claims

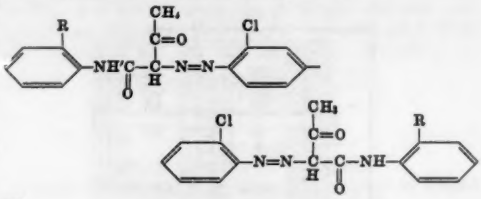
A catalyst system particularly useful in alpha-olefin copolymerization is prepared by the admixture of an ether complex of aluminum borohydride; selected organic-soluble halovanadium compounds such as vanadium oxytrichloride; and a selected Lewis acid, such as aluminum tribromide or aluminum trichloride. Solubility of the aluminum trichloride can be enhanced by pretreatment with an alkyl halide, such as 1-iodoethane. The catalyst may be formed separately or in situ in the polymerization reaction mixture.

3,597,368
LIQUID DEVELOPER FOR ELECTROPHOTOGRAPHY CONTAINING YELLOW PIGMENT

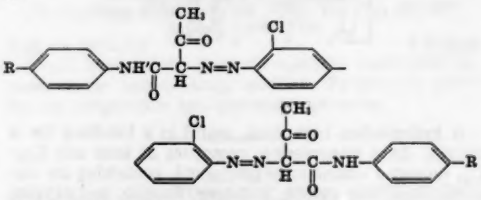
Satoru Honjo, Yasuo Tamai, Masaya Yamamoto, and Hisatake Ono, Asaka-shi, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan

No Drawing. Filed Aug. 12, 1968, Ser. No. 751,703
Claims priority, application Japan, Aug. 11, 1967, 42/51,600
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 9 Claims

A liquid developer for developing a latent electrostatic image containing at least one of the following:



or



wherein R is OCH_3, OC_2H_5 or OC_3H_7.

3,597,369
POLYETHERS WHICH ARE COPOLYMERS BASED ON TETRAMETHYLETHYLENE OXIDE AND PROCESS OF MAKING SAME

George Edward Foll, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 16, 1966, Ser. No. 527,758
Claims priority, application Great Britain, Mar. 8, 1965, 9,735/65; July 28, 1965, 32,266/65; Dec. 9, 1965, 52,335/65
Int. Cl. C08g *23/06*
U.S. Cl. 260—2 17 Claims

Thermoplastic polyethers of improved thermal stability and elevated melting point are obtained by copolymerizing 25% to 75% by weight of tetramethylethylene oxide with from 75% to 25% by weight of a cyclic 1,2-epoxide such as cyclohexene 1,2-epoxide and/or 4-vinyl cyclohexene-1,2-epoxide, an epihalohydrin, a butene-2-oxide or a 1-methyl or 1,1-dimethyl derivative thereof, or a mixture of a cyclic 1,2-epoxide with an epihalohydrin and/or 1,2-dialkylethylene oxide.

3,597,370
HOLLOW BODIES OF COPOLYMERS OF VINYL CHLORIDE AND ETHYLENE

Herbert Bartl, Cologne-Stammheim, Ernst Willi Müller, Leverkusen, and Frank Wingler, Cologne-Kalk, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 11, 1967, Ser. No. 652,434
Claims priority, application Germany, Aug. 17, 1966, F 49,964
Int. Cl. B01v *13/02*; C08v *1/26*
U.S. Cl. 260—2.5 4 Claims

Copolymers of vinyl chloride and ethylene together with the optional presence of propylene in the form of

hollow bodies having a bulk density of 0.005 to 0.5 g./cm.^{3} and a diameter of 0.01 to 2 mm. and process of producing by blowing, said bodies being useful as packing material and insulating material.

3,597,371

POLYURETHANE FOAMS BASED ON ALKYLENE OXIDE ADDUCTS OF ALKYLENE-BIS-PHENYLENE DIAMINES

J. W. Britain, New Martinsville, W. Va., assignor to Mobay Chemical Company, Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 613,087, Feb. 1, 1967, which is a continuation-in-part of application Ser. No. 452,898, May 3, 1965, which in turn is a continuation-in-part of application Ser. No. 54,546, Sept. 7, 1960. This application June 5, 1969, Ser. No. 833,875

Int. Cl. C08g *22/08, 22/44*

U.S. Cl. 260—2.5AQ **6 Claims**

Polyurethane foams made by reacting an organic polyisocyanate in the presence of a blowing agent with an alkylene oxide adduct of alkylene-bis-phenylene diamines.

3,597,372

PRODUCTS AND PROCESS FOR PRODUCTION OF THE SAME

Paul M. Cook, Atherton, Calif., assignor to Raychem Corporation, Redwood City, Calif.

No Drawing. Filed Oct. 31, 1960, Ser. No. 65,953

Int. Cl. C29c *13/00*

U.S. Cl. 260—4 **35 Claims**

1. An article of manufacture composed of an organic polymeric composition comprising a cross-linked elastomeric component having incorporated therewith and substantially uniformly distributed therein an organic, normally solid heat-flowable constituent having a softening temperature above about 140° F., said heat-flowable constituent being present in an amount sufficient to hold said elastomeric component in a stretched, elastically deformed condition, said article being elastomeric and having a Young's modulus determined in accordance with ASTM D–638 in the range of from about 50 to about 3000 p.s.i. at storage temperatures and at the softening temperature of said heat-flowable constituent and being in a dimensionally heat-unstable condition capable of altering its physical form upon application of heat alone to soften said heat-flowable constituent, said article upon application of such heat assuming a dimensionally heat-stable condition, the article in its altered, heat-stable form being elastomeric and having a Young's modulus determined in accordance with ASTM D–638 in the range of from about 50 to about 3000 p.s.i.

3,597,373

COATING COMPOSITION OF A MIXTURE OF A VINYL CHLORIDE-ACETATE COPOLYMER WITH A MIXTURE OF ACRYLIC RESINS AND ONE-HALF SECOND CELLULOSE ACETATE BUTYRATE

Robert M. Bregoff, 10818 Kane St., Whittier, Calif. 90604, and Harvey J. Golumbic, 1517 Sunrise Lane, Fullerton, Calif. 92633

No Drawing. Continuation of application Ser. No. 654,376, July 19, 1967. This application Jan. 5, 1970, Ser. No. 502

Int. Cl. C08f *37/18;* **C09d** *3/76;* **D06p** *1/76*

U.S. Cl. 260—17R **6 Claims**

A coating composition for use on porous and nonporous substrates is composed of a vinyl chloride-acetate copolymer, acrylic resins, plasticizers, stabilizers, antioxidants and pigments or dyes in solution in a solvent. The acrylic resins are methyl methacrylate acidic copolymer of medium molecular weight and an acidic number of from 12 to 15 in about equal parts with n-butyl methacrylate. The plasticizers are polymerized castor oil and modified methyl acetyl ricinolate in a ratio of about 1.3 parts by weight to 1 part by weight of the vinyl chloride copolymer. The solvent content is varied to suit the particular method of coating. In most applications, coatings on vinyls and leather, for example, one-half second cellulose acetate butyrate is used to block plasticizer migration to the surface of the coating or film.

3,597,374

COATING PROCESS FOR FIBROUS SUBSTRATES

Leo E. Nagan, Mercer Island, Wash., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Sept. 28, 1966, Ser. No. 582,496

Int. Cl. C08f *29/30*

U.S. Cl. 260—17.4 **2 Claims**

A coating composition for paper and similar substances which comprises an aqueous solution of starch, a water-soluble cationic polymer and a water-soluble acrolein polymer.

3,597,375

ADHESIVE COMPOSITION FROM LIGNOSULFONATE PHENOPLASTS

Charles H. Ludwig and Albert W. Stout, Bellingham, Wash., assignors to Georgia-Pacific Corporation, Portland, Oreg.

No Drawing. Filed July 30, 1969, Ser. No. 846,217

Int. Cl. C08g *5/18, 37/14*

U.S. Cl. 260—17.5 **12 Claims**

An adhesive resin composition prepared by prereacting lignosulfonate with phenol under alkaline conditions and subsequently reacting the lignosulfonate-phenol product with formaldehyde under alkaline conditions.

3,597,376

ALCOHOL SOLUBLE POLYAMIDE RESINS AND METHOD OF PREPARING THE SAME

Hiroji Tashiro, Tokyo, Japan, assignor to Ajinomoto Co., Inc., and Toka Shikiso Chemical Industry Co., Ltd., both of Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 636,594, May 6, 1967. This application Mar. 4, 1968, Ser. No. 709,938

Claims priority, application Japan, May 16, 1966, 41/30,666

Int. Cl. C08g *20/26*

U.S. Cl. 260—18N **11 Claims**

Polyamide resins soluble in lower alkanols and having relatively high softening points are obtained by condensing a dimerized fatty acid, a diamine and a spiroacetal dicarboxylic acid or its alkyl ester in the presence of a molecular-weight controlling agent. The resins are good binders for printing inks.

3,597,377

BUTYL RUBBER ADHESIVE AND CAULKING COMPOSITIONS

Anthony J. Berejka, Cranford, and Anthony Lagani, Jr., Newark, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed May 6, 1968, Ser. No. 727,002

Int. Cl. C08d *9/12*

U.S. Cl. 260—27 **5 Claims**

An adhesive sealant base comprising butyl rubber and a tackifier is prepared by heat treating in the presence of (1) a halogenated phenol aldehyde resin or (2) a phenol aldehyde resin in conjunction with a halide containing activator.

3,597,378

POLYAMIDE WAXES IN ASPHALT AND BITUMEN

Richard Kubiak, Cincinnati, and William P. Enlow, Reading, Ohio, assignors to Carlisle Chemical Works, Inc., Reading, Ohio

No Drawing. Filed Aug. 29, 1968, Ser. No. 756,319
Int. Cl. C08g 51/52
U.S. Cl. 260—28 6 Claims

A bituminous product, preferably asphalt, is prepared having as a flow point stabilizer a high melting synthetic wax or resinous amide which is either (1) the condensation product of (a) $HOOCR_1COOH+$ (b) R_2COOH+ (c) $R_3NHR_4NHR_3$ or (2) $R_5COOH+R_3NHR_4NHR_3$ where R_1 is aliphatic hydrocarbon of 1 to 34 carbon atoms, R_2 is aliphatic hydrocarbon or halohydrocarbon of at least seven carbon atoms, R_3 is hydrogen or lower alkyl, R_4 is aliphatic hydrocarbon of 2 to 10 carbon atoms, R_5 is alkyl of at least 19 carbon atoms. The molar ratio of (b) to (a) can be from

$$\frac{1(b)-6(b)}{(a)}$$

The acid groups of (a)+(b) equal the amine groups of (c).

The preferred amide products for use in the invention come within product (1) and are made from reactants (a) $HOOC(CH_2)_mCOOH+$ (b) $CH_3(CH_2)_oCOOH$ or $CH_3(CH_2)_o(CH=CH)_pCOOH+$ (c) $H_2N(CH_2)_nNH_1$ where n is 2 to 10, m is 4 to 20, o is 6 to 22 and p is 1 to 3.

3,597,379

ADHESIVE COMPOSITION OF PHENOL-FORMALDEHYDE RESIN AND RUBBER LATICES

Robert J. Van Valkenburg, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Apr. 15, 1968, Ser. No. 721,146
Int. Cl. C08g 5/06
U.S. Cl. 260—29.3 3 Claims

Rubber is reinforced with a cord bonded to the rubber with an adhesive containing a phenol/formaldehyde resin and certain rubber latices present in certain amounts to produce an all-purpose adhesive useful in a one-step bonding system.

3,597,380

MODIFIED METHYLOLATED ALIPHATIC CARBAMATE PERMANENT PRESS TEXTILE RESIN

Angelo Joseph Bertini and Morris Stephen Edmondson, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed July 25, 1968, Ser. No. 747,492
Int. Cl. C08g 9/30
U.S. Cl. 260—29.4 3 Claims

Preparing a textile treating resin by reacting melamine with an aqueous solution of a methylolated aliphatic carbamate having free formaldehyde therein whereby reducing the free formaldehyde content. Suitable carbamates are methylolated alkyl, hydroxyalkyl and alkoxyalkyl carbamates. The pH ranges from 3.5 to 7.5 depending upon the specific carbamate used and the ratio of free formaldehyde to melamine is generally from about 6:1 to 9:1.

3,597,381

COLOR STABILIZED AQUEOUS DISPERSIONS OF IMINATED VINYL ADDITION POLYMERS AND PROCESS FOR PREPARING SAME

Robert A. Ripley, Ottawa, Ontario, Canada, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 637,084, May 9, 1967. This application Jan. 21, 1970, Ser. No. 4,780
Int. Cl. C08f 37/00, 37/14
U.S. Cl. 260—29.6HN 13 Claims

Aqueous dispersions of iminated vinyl addition polymers containing small amounts of an ammonia derivative compound, such as hydroxylamine hydrochloride, hydrazines, semicarbazides, and their derivatives, exhibit improved color stability.

3,597,382

CARBOXYL-CONTAINING ETHYLENE COPOLYMERS

George N. Foster, Hillsborough Township, N.J., assignor to Union Carbide Corporation

No Drawing. Filed Oct. 30, 1967, Ser. No. 679,207
Int. Cl. C08f 45/44; C08k 1/44
U.S. Cl. 260—32.6 16 Claims

The slip properties of both carboxyl containing ethylene polymers containing from about 2 to 25% by weight of an α, β-ethylenically unsaturated carboxylic acid and alkali metal, alkaline earth, or zinc salts, of these copolymers have been improved by incorporating therein from about 0.02 to 1.0% by weight of secondary fatty acid amides containing from about 20 to 24 carbon atoms and in which the nitrogen atom is substituted with a saturated hydrocarbon radical having from 14 to 26 carbon atoms.

3,597,383

PROCESS FOR MAKING A GRANULAR, DRY POLYESTER RESIN MOLDING COMPOSITION AND THE PRODUCT PRODUCED THEREBY

Robert James Shrontz, Perrysburg, Ohio, assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,137
Int. Cl. C08g 51/04, 51/34
U.S. Cl. 260—32.8 8 Claims

A process for making a granular polyester resin molding composition comprising mixing two different unsaturated polyester resins in an inert organic liquid dispersing medium in the presence of a finely divided particulate mineral filler and a peroxide catalyst and removing the liquid medium.

3,597,384

ACRYLIC VARNISH

Václav Kugler, Richard Chromeček, Karel Kliment, Jaroslava Otoupalová, Vladimír Stoy, and Miroslav Štol, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed May 14, 1968, Ser. No. 728,912
Int. Cl. C08f 29/50
U.S. Cl. 260—32.6 7 Claims

Films which are fully transparent and prevent fogging of windows and the like are prepared from varnishes mainly consisting of polymers of ethyleneglycol monomethacrylate or acrylate and may contain the corresponding polymeric acrylates or methacrylates of diethyleneglycol or polyethyleneglycol, together with minor amounts of hydrophobic acrylic resins or nitrocellulose. The liquid medium of the varnish should contain a small amount of a high boiling solvent and enough volatile solvent to dissolve the resinous ingredients.

3,597,385

PROCESS FOR THE MANUFACTURE OF SELF-EXTINGUISHING, NON-GLOWING, FILLER-CONTAINING RUBBER BLENDS

Klaus Komorniczyk, Turnich-Balkhausen, Franz-Josef Dany, Hurth, near Cologne, and Joachim Kandler and Hans-Peter Beu, Lechenich, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,437
Claims priority, application Germany, Dec. 4, 1968, P 18 12 521.8
Int. Cl. C08c 11/24; C08f 45/30
U.S. Cl. 260—33.8 8 Claims

Production of self-extinguishing, non-glowing, filler-containing rubber blends which are capable of being

vulcanized, by incorporating a flameproofing agent into the filler-containing rubber blend. The flameproofing agent is a ternary mixture consisting of pulverulent red phosphorus, ammonium bromide and a chlorinated paraffin.

3,597,386

FURFURYL ALCOHOL COMPOSITIONS

Leon de Brabander, Wilmington, Del., assignor to Haveg Industries, Inc., Wilmington, Del.

No Drawing. Filed Apr. 25, 1968, Ser. No. 724,230
Int. Cl. C08g *9/24*
U.S. Cl. 260—37 **23 Claims**

The addition of a small amount of a mono-olefin polymer, preferably polypropylene, to a filled furfuryl alcohol resin containing a latent sulfonic acid salt catalyst dissolved in water reduces the amount of cracking of the product and improves the chemical resistance. Furthermore, the addition of a small amount of mono-olefin polymer to this mixture further improves the workability of the mixture and further improves the product. The preferred latent catalyst mixture contains ammonium benzene sulfonate and ammonium p-toluenesulfonate dissolved in water. With asbestos filler, a mono-olefin polymer addition also improves furfuryl alcohol resins containing dry catalysts.

3,597,387

STABILIZED OXYMETHYLENE POLYMERS

Leon Starr, Plainfield, and David Jon Runyon, Brick Township, Ocean County, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,146
Int. Cl. C08g *51/08, 51/60*
U.S. Cl. 260—37AL **12 Claims**

Pigmented oxymethylene polymers are stabilized by a novel stabilizer which comprises a phosphine or phosphine oxide, an oxymethylene polymer antioxidant, a metal oxide and a modified fatty acid polyamide. This unique stabilizer need only be used in very limited quantities to impart an improvement in thermal stability. A preferred composition comprises (A) a tertiary phosphine oxide, (B) a phenolic antioxidant, (C) an alkaline earth metal oxide and (D) a modified fatty acid polyamide. On molding these novel compositions, there are no mold deposits.

3,597,388

POLYCHLOROPRENE FOR SURFACE COATING COMPOSITIONS

Klaus Hoehne, Leverkusen, and Georg Freudenberg, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 486,216, Sept. 9, 1965. This application Nov. 3, 1967, Ser. No. 680,345
Int. Cl. C08f *45/04*; C08k *1/06*
U.S. Cl. 260—41R **4 Claims**

Masticated storage stable compositions comprising a polychloroprene of medium crystallization tendency having specified hardness and Mooney viscosity, a polychloroprene of strong crystallization tendency having specified hardness and Mooney viscosity, magnesium oxide and zinc oxide, process for preparing the same and paint and surface coating, including the same.

3,597,389

MOISTURE RESISTANT DENTAL RESTORATIVE COMPOSITIONS

Charles W. Taylor, East Oakdale Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Mar. 15, 1968, Ser. No. 713,318
Int. Cl. C08f *43/04*
U.S. Cl. 260—41 **4 Claims**

Dental compositions are provided of inorganic particulate material as filler, tertiary aromatic amine as potential accelerator and, as vehicles or binders, methacrylate esters of aromatic or unsaturated lower aliphatic diacid hemiesters with di- or tri-primary diols or triols. Polymerization is initiated in these combinations by free radical generating catalysts to give products which have relatively low sensitivity to moisture and are usefully employed in dental cavities as fillings.

3,597,390

STABILIZED HIGH TEMPERATURE THERMOPLASTICS

Gerald W. Miller, Pittsburgh, Pa., assignor to Mobay Chemical Company, Pittsburgh, Pa.

No Drawing. Filed Mar. 18, 1968, Ser. No. 714,026
Int. Cl. C08f *45/58*; C08g *51/58*; C09k *3/28*
U.S. Cl. 260—45.7 **11 Claims**

Self-extinguishing thermoplastics stabilized against thermal degradation with a stabilizing amount of a tris-(halophenyl)phosphite, a tris - (halo - alkylphenyl)phosphite, a tris-(halonaphthyl)phosphite, a tris-(halo-alkylnaphthyl)phosphite, a tris-(halophenyl)phosphine, a tris-(halo-alkylphenyl)phosphine, a tris-(halonaphthyl)phosphine, a tris-(halo-alkylnaphthyl)phosphine, a poly(halophenylphosphite) a poly(halonaphthylphosphite), a poly-(halo-alkylphenylphosphite), a poly(halo-alkylnaphthylphosphite) and mixtures thereof.

3,597,391

AROMATIC POLYAMIDE IMINES, NOVEL N-ARYL SUBSTITUTED - POLYBENZIMIDAZOLES DERIVED THEREFROM, AND PROCESS FOR PREPARATION THEREOF

Shigeyoshi Hara, Moriya Uchida, and Masao Senoo, Tokyo, Japan, assignors to Teijn Limited, Osaka, Japan

No Drawing. Filed Sept. 6, 1968, Ser. No. 758,113
Claims priority, application Japan, Sept. 11, 1967, 42/58,253; Sept. 16, 1967, 42/59,277; Oct. 19, 1967, 42/67,420, 42/67,421
Int. Cl. C08g *33/02, 33/06*
U.S. Cl. 260—47 **22 Claims**

A process for preparing a polyamide imine and a heat-stable polybenzimidazole which comprises reacting an aromatic triamine such as 2,4'-diaminodiphenylamine wherein two amino groups are attached to ortho-positions of an aromatic ring, or an aromatic tetramine such as N,N'-bis-(2 - aminophenyl-p-phenylenediamine) wherein each two amino groups are attached to ortho positions of each separate aromatic ring, with an aromatic dicarboxylic halide to form a polyamide imine which is soluble in a normal organic solvent, and heating or chemically treating said polyamide imine to convert it into a heat stable polybenzimidazole.

3,597,392

FUNCTIONALLY SUBSTITUTED HIGHLY ORDERED AZO-AROMATIC POLYIMIDES

Hartwig Bach and Helmuth E. Hinderer, Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 21, 1969, Ser. No. 792,824
Int. Cl. C08g *20/32*
U.S. Cl. 260—47CP **6 Claims**

A class of ordered fiber and film-forming aromatic polyamide acids and corresponding polyimides derived from certain symmetrical aromatic azo diamines bearing acid, hydroxyl or mercapto substituents or derivatives hydrolyzable to such substituents have been found to possess excellent thermal, and mechanical properties useful in fibers, films and other shaped articles.

3,597,393

FUNCTIONALLY SUBSTITUTED HIGHLY ORDERED AZO-AROMATIC POLYAMIDES

Hartwig C. Bach and Helmuth E. Hinderer, Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 21, 1969, Ser. No. 792,770
Int. Cl. C08g 20/20, 20/30, 20/32
U.S. Cl. 260—47CP 4 Claims

A class of ordered fiber and film forming aromatic polyamides derived from certain substituted symmetrical aromatic azo diamines has been found to possess excellent thermal, mechanical and electrical properties useful in the manufacture of fibers, films and other shaped articles.

3,597,394

BRANCHING OR CROSSLINKING OF POLYCARBONATES

Herbert L. Rawlings, New Martinsville, W. Va., assignor to Mobay Chemical Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 16, 1969, Ser. No. 867,065
Int. Cl. C08g 17/13
U.S. Cl. 260—47XA 5 Claims

Polycarbonates are branched or crosslinked by the addition of the cyclic trimer of phosphonitrilic chloride.

3,597,395

MOLECULAR COMPLEXES OF POLYMERIC CYCLIC CARBAMATES WITH SULFATES, SULFONATES AND SULFONAMIDES

Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Application Aug. 19, 1966, Ser. No. 573,488, which is a continuation-in-part of application Ser. No. 12,254, Mar. 2, 1960. Divided and this application Feb. 4, 1969, Ser. No. 796,594
Int. Cl. C08f 7/12
U.S. Cl. 260—47 1 Claim

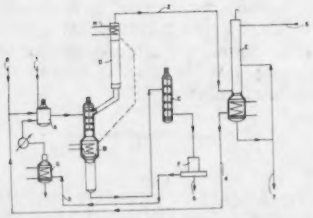
Complex obtained by mixing a polyvinyl lactam with an organic sulfur compound, characteristically a sulfate, sulfonate, or sulfonamide.

3,597,396

STABILIZATION OF POLYOXYMETHYLENES

Jacob Ackermann, Pierino Radici, and Giorgio Anessi, Milan, Italy, assignors to Società Italiana Resines S.p.A., Milan, Italy

Filed July 25, 1968, Ser. No. 747,732
Claims priority, application Italy, Aug. 1, 1967, 19,064/67
Int. Cl. C08g 1/24
U.S. Cl. 260—67 7 Claims



Monomeric formaldehyde evolving during stabilization of a polyoxymethylene by means of a reagent blocking the terminal groups of the latter is recovered by carrying out the stabilization reaction in an inert, water-immiscible solvent, at boiling temperature of the mixture, the boiling point of the solvent being lower than that of the reagent, and the boiling temperature of the mixture being in excess of the temperature at which formaldehyde would polymerize; the evolved vapours are rectified to recover formaldehyde.

3,597,397

PROCESS FOR THE PREPARATION OF OXYMETHYLENE COPOLYMERS

Catherine S. H. Chen, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation of application Ser. No. 704,862, Feb. 12, 1968. This application Sept. 23, 1969, Ser. No. 861,228
Int. Cl. C08g 1/16
U.S. Cl. 260—67 4 Claims

Oxymethylene copolymers are prepared by reacting trioxane with a comonomer such as ethylene oxide in the presence of methylene chloride and a polymerization catalyst comprising boron fluoride. These copolymers can be used in a variety of applications such as film production, molding articles and the like.

3,597,398

SPANDEX POLYMERS OF POLYMERIC DIOLS, FUNCTIONALLY ALIPHATIC DIISOCYANATES AND NON-HINDERED FUNCTIONALLY ALIPHATIC DIAMINES

Burns Davis and Charles J. Kibler, Kingsport, Tenn., and James G. Smith, Waterloo, Ontario, Canada, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of applications Ser. No. 378,950 and Ser. No. 379,002, both filed June 29, 1964. This application Mar. 18, 1968, Ser. No. 713,967
Int. Cl. C08g 22/04
U.S. Cl. 260—77.5AM 18 Claims

Elastomeric spandex fibers of segmented urea/urethane/ether copolymers wherein the ether portion is derived from a poly(tetramethylene) glycol or a copolymer thereof which may include 1,2-cyclohexylenedimethyleneoxy (called OBN) repeat units, the urethane portion is derived from a functionally aliphatic non-hindered hydrocarbon diisocyanate, the urea portion is derived by chain-extension from water and/or a functionally aliphatic non-hindered hydrocarbon diamine, said segmented copolymer having from 2 to 8 percent by weight of urea segments whereby the segmented copolymer can be dissolved in normally useful solvents for spinning spandex fibers and solutions can be obtained which possess substantially constant viscosity, are stable against gelation and can be spun into textile fibers. When chain-extension is only 70 to 98 percent completed before spinning, the fibers spun can be improved by treatment with a water medium such as steam or humidity in the atmosphere. When OBN is present as a repeat unit in the copolymer glycol the low temperature properties of the spandex fibers are enhanced.

3,597,399

PROCESS FOR RETARDING THE HARDENING OF EPOXIDE RESINS UTILIZING SULFO COMPOUNDS AND RETARDING COMPOSITIONS

Edgar Lieske, Dusseldorf, and Erwin Weinrich, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,421
Claims priority, application Switzerland, Apr. 29, 1968, 6,341/68; Germany, Feb. 1, 1969, P 19 04 934.4
Int. Cl. C08g 30/12
U.S. Cl. 260—77.5 11 Claims

A process for retarding the hardening of an epoxide resin at elevated temperature which comprises admixing a retarding amount of a sulfo compound having the formula

$$R(O)_n—SO_2—X$$

wherein X represents a member selected from the group consisting of lower alkoxy, hydroxyl and chlorine, *n* represents an integer selected from the group consisting of 0 and 1 and R represents a member selected from the group consisting of NH_2— and organic radicals, to a hardenable mixture of (1) a hardenable epoxide compound containing more than one epoxide group in the

molecule and (2) an organic polycarboxylic acid anhydride epoxide resin hardener, said hardenable mixture being maintained at a temperature sufficient to cause an epoxide resin hardening reaction. The compositions containing the sulfo compounds delay the hardening of the hardenable epoxide resin mixture for varying times depending on the amount of retarding compound utilized as well as the hardenable epoxide resin and the temperature.

3,597,400

SYNTHETIC LINEAR TRANSPARENT POLYAMIDES

Yoshikazu Kashiro, Ryouzo Takada, Takaya Yasumoto, and Masakazu Inoue, Nagoya-shi, Japan, assignors to Toyo Rayon Kabushiki Kaisha, Tokyo, Japan

Filed June 30, 1969, Ser. No. 837,618
Claims priority, application Japan, July 2, 1968, 43/45,619
Int. Cl. C08g *20/20*
U.S. Cl. 260—78R 2 Claims

Synthetic linear polyamide consisting essentially of a polycondensate from substantially equimolar amounts of a diamine component consisting of bis(4-aminocyclohexyl)methane and hexamethylene diamine, and a dicarboxylic component consisting of terephthalic acid and isophthalic acid, the composition ratio of the diamine component and the dicarboxylic acid component being within a specific range and said polyamide having a relative viscosity $\eta_{rel.}$, measured in a solution of 1 g. of the polyamide in 100 cc. of 98% concentrated sulfuric acid at 25° C., of at least 1.9, and process for preparation thereof.

3,597,401

LACTAM POLYMERIZATION WITH THIOLACTONE INITIATORS

James E. McGrath, Somerville, and Markus Matzner, Edison, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,359
Int. Cl. C08g *20/18*
U.S. Cl. 260—78 10 Claims

Thiolactones are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers so as to provide for a rapid polymerization process. The polymers thus obtained have good physical properties and good color.

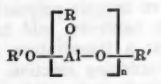
3,597,402

POLYMERIZATION OF CYCLIC ALKYLENE EPISULFIDES WITH CATALYST SYSTEMS OF A POLYMERIC ALUMINUM ALCOHOLATE AND AN ORGANOMETALLIC

Hideo Tomomatsu, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,721
Int. Cl. C08g *23/06, 25/00*
U.S. Cl. 260—79 16 Claims

High molecular weight polymers are obtained from the polymerization of cyclic ethylene and propylene episulfides and the co-polymerization of cyclic ethylene and propylene oxides with cyclic ethylene and propylene episulfides employing a binary catalyst system of an organometallic compound of dialkyl zinc or trialkyl aluminum and a polymeric aluminum alcoholate having the formula:



Cyclic alkylene episulfides employed are those containing sulfur-carbon rings consisting of one sulfur atom in a ring with two or three carbon atoms. The polyepisulfides and co-polymers of episulfides are useful in the elastomer field.

3,597,403

NOVEL CATALYSTS FOR THE RING-OPENING POLYMERIZATION OF UNSATURATED ALICYCLIC COMPOUNDS

Eilert A. Ofstead, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,909
Int. Cl. C08f *7/02, 15/04*
U.S. Cl. 260—88.2 8 Claims

There is disclosed a process for the ring-opening polymerization of certain unsaturated alicyclic compounds which comprises subjecting said unsaturated alicyclic compounds to a catalyst system comprising (A) at least one compound selected from a group consisting of alkylaluminum dihalides, alkylaluminum sesquihalides and aluminum halides, (B) at least one compound selected from the group consisting of molecular oxygen, chlorine, bromine, iodine and cyanogen halides, and (C) at least one transition metal compound selected from the group consisting of tungsten and molybdenum carbonyl complex compounds corresponding to the formula $M(CO)_4R$ where M is tungsten and molybdenum and R is an unsaturated hydrocarbon compound having at least two nonconjugated carbon-to-carbon double bonds and wherein R is attached to the transition metal by coordination through two carbon-to-carbon double bonds.

3,597,404

CATALYTIC PROCESS FOR PREPARING TRIAZINES AND NITRILE POLYMERS

William E. Emerson and Edwin Dorfman, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 570,183, Aug. 4, 1966, which is a continuation-in-part of application Ser. No. 441,331, Mar. 19, 1965, both now abandoned. This application May 1, 1967, Ser. No. 634,848
Int. Cl. C08f *3/14*
U.S. Cl. 260—88.7 7 Claims

This invention (A) relates to a process for preparing triazines, nitrile polymers, and cross-linked polymers or copolymers by (1) condensing a nitrile in the presence of or (2) contacting a polymer or copolymer with a metal oxide catalyst selected from the Periodic Table Groups I–B, II–A, II–B, III, IV, V, VII–B, and VIII, preferably Groups I–B, II–A, II–B, III, IV–A, and V–A such as silver oxide, mercuric oxide, cupric oxide, cadmium oxide, the oxides of lead, antimony oxide, barium oxide, thallium oxide, and zinc oxide, the nitrile typically being perfluorobutyronitrile, difluoroacetonitrile, difluorochloroacetonitrile, perfluoroglutaronitrile, perfluorosuccinonitrile, benzonitrile, trifluoroacetonitrile, pentafluoropropionitrile, perfluoromalononitrile, bromotetrafluoropropionitrile, trichloroacetonitrile, bromooctafluorovaleronitrile, perfluorooctanonitrile, bromohexafluorobutyronitrile, and the like; and (B) relates to the nitrile polymers and cross-linked polymers or copolymers produced by the above process and/or such compounds containing the above-identified catalysts.

3,597,405

POLYTETRAFLUOROETHYLENE POWDER AND METHOD FOR MAKING THE SAME

Yutaka Kometani, Takarazuka-shi, Shun Koizuma, Osaka, and Takeshi Suzuki, Takeaki Nakajima, and Chuzo Okuno, Osaka-fu, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 17, 1967, Ser. No. 631,442
Claims priority, application Japan, Apr. 21, 1966, 41/25,567
Int. Cl. C08f *1/84, 3/24, 45/04*
U.S. Cl. 260—92.1 4 Claims

A process for the preparation of agglomerated polytetrafluoroethylene powder of good powder flow properties,

having particle diameters ranging 100–5,000 microns and an angle of repose of not greater than 45°.

3,597,406

POLYMERS OF HYDROCARBON SUBSTITUTED 1,5-CYCLOOCTADIENES AND METHODS FOR THEIR POLYMERIZATION

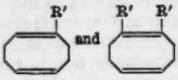
Nissim Calderon, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 785,032, Dec. 10, 1968, which is a continuation of application Ser. No. 477,035, Aug. 3, 1965, which in turn is a continuation-in-part of application Ser. No. 448,872, Apr. 16, 1965. This application Apr. 30, 1969, Ser. No. 820,632

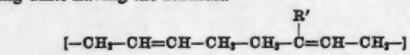
Int. Cl. C08f 7/02

U.S. Cl. 260—93.1 8 Claims

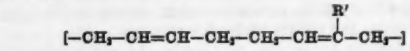
There is disclosed a method for the ring opening polymerization of hydrocarbon substituted cyclooctadienes of the formula



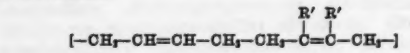
wherein R′ is an alkyl, aryl, aralkyl, alkaryl, cycloalkyl or bicycloalkyl radical which comprises polymerizing these hydrocarbon substituted 1,5-cyclooctadienes in the presence of a catalyst system comprising (A) at least one organometallic compound wherein the metal is selected from the group consisting of *Ia*, *IIa*, *IIb* and *IIIa* of the Periodic Table of Elements, (B) at least one transition metal salt selected from the group consisting of tungsten and molybdenum halides and (C) at least one compound of the general formula R—Y—H wherein Y is oxygen; H is hydrogen and R is a radical selected from the group consisting of (1) hydrogen, (2) alkyl, (3) aryl, (4) arylalkyl, (5) alkaryl, (6) alkenyl, and (7) radicals of (2) through (6) wherein at least one hydrogen of the radical R may be substituted by at least one hydroxyl OH group. Polymers consisting of repeating units having the formula



or the formula



or the formula



wherein R′ is a methyl, ethyl, propyl or butyl radical, are also disclosed.

3,597,407

DIENE POLYMERIZATION WITH ORGANOMETAL AND IRON COMPLEX

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application Dec. 7, 1964, Ser. No. 416,607, now Patent No. 3,475,395, dated Oct. 28, 1969. Divided and this application June 11, 1969, Ser. No. 832,444

Int. Cl. C08d 3/06

U.S. Cl. 260—94.3 10 Claims

Polymers of conjugated dienes are prepared by contacting the monomer system with a catalyst which forms on mixing (1) a compound selected from the group consisting of certain organozic and organoaluminum compounds and (2) the reaction product of an iron salt with an N,N-dimethylamide of a fatty acid.

3,597,408

CONTINUOUS CHLORINATION OF POLYETHYLENE

Hans-Georg Trieschmann, Hambach, Gerhard Zeitler, Hessheim, Pfalz, Lothar Reuter and Heiner Dickhaeuser, Ludwigshafen (Rhine), and Helmut Pfannmueller, Limbergerhof, Pfalz Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 26, 1968, Ser. No. 755,396

Claims priority, application Germany, Aug. 29, 1967, P 17 20 296.9

Int. Cl. C08f 27/03

U.S. Cl. 260—94.9 7 Claims

A continuous process for the chlorination of relatively coarse particled high pressure polyethylene as a suspension of 2–6 mm. particles in a liquid chlorohydrocarbon with withdrawal of the chlorinated polyethylene as a solution in the chlorohydrocarbon.

3,597,409

PROCESS FOR RECOVERING IMMUNOGLOBULIN A AND IMMUNOGLOBULIN M

Charles Benedict Breuer, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 25, 1970, Ser. No. 40,399

Int. Cl. C07g 7/00

U.S. Cl. 260—112B 6 Claims

This disclosure describes a multistep process for recovering an immunoglobulin A enriched preparation and an immunoglobulin M enriched preparation from human blood protein fractions, said preparations being useful for the prophylaxis and therapy of certain infectious diseases.

3,597,410

PROCESS FOR RETARDING THE HARDENING OF EPOXIDE RESINS USING A BARBITURIC RETARDER AND RETARDING COMPOSITIONS

Edgar Lieske, Dusseldorf, and Erwin Weinrich, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

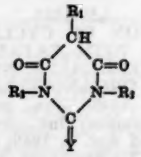
No Drawing. Filed Apr. 22, 1969, Ser. No. 818,422

Claims priority, application Switzerland, Apr. 29, 1968, 6,342/68; Germany, Feb. 1, 1969, P 19 04 936.6

Int. Cl. C08g 30/10

U.S. Cl. 260—77.5R 9 Claims

A process for retarding the hardening of an epoxide resin at elevated temperatures which comprises admixing a retarding amount of a barbituric compound having the formula



wherein Y is a member selected from the group consisting of O and S, R_2 represents members selected from the group consisting of hydrogen and alkyl having from 1 to 8 carbon atoms, phenyl, and halogen and nitro substituted derivatives thereof, and R_1 represents members selected from the group consisting of hydrogen, nitro and nitroso, to a hardenable mixture of (1) a hardenable epoxide compound containing more than one epoxide group in the molecule and (2) an organic polycarboxylic acid anhydride epoxide resin hardener, said hardenable mixture being maintained at a temperature sufficient to cause an epoxide resin hardening reaction. The compositions containing the barbituric compounds delay the hardening of the hardenable epoxide resin mixture for varying times depending on the amount of retarding compound utilized as well as the hardenable epoxide resin and the temperature.

3,597,411

HARDENABLE EPOXIDE RESIN COMPOSITIONS CONTAINING NITROPHENOLIC HARDENING RETARDANTS AND PROCESS FOR RETARDING THE HARDENING OF EPOXIDE RESIN COMPOSITIONS

Erwin Weinrich and Manfred Budnowski, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,420
Claims priority, application Switzerland, Apr. 25, 1968, 6,173/68; Germany, Feb. 1, 1969, P 19 04 935.5
Int. Cl. C08g *30/10*
U.S. Cl. 260—47EC 8 Claims

A process for retarding the hardening of an epoxide resin at elevated temperatures which comprises admixing a retarding amount of an aromatic acidic phenolic compound having at least one acidic phenolic hydroxyl and at least two nitro groups in the molecule to a hardenable mixture of (1) a hardenable epoxide compound containing more than one epoxide group in the molecule and (2) an organic polycarboxylic acid anhydride epoxide resin hardener, said hardenable mixture being maintained at a temperature sufficient to cause an epoxide resin hardening reaction. The compositions containing the aromatic acidic phenolic compound delay the hardening of the hardenable epoxide resin mixture for varying times depending on the amount of retarding compound utilized as well as the hardenable epoxide resin and the temperature.

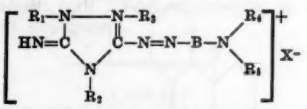
3,597,412

BASIC TRIAZOLE CONTAINING MONO-AZO DYESTUFFS

Reinhard Mohr and Johann Ostermeier, Offenbach am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 522,057, Jan. 21, 1966. This application Jan. 8, 1969, Ser. No. 789,963
Int. Cl. C09b *29/06*; D06p *1/02*
U.S. Cl. 260—146 7 Claims

Basic azo dyestuffs of the formula:



wherein R_1 is aryl, R_2 and R_3 are alkyl or aralkyl, R_4 and R_5 are unsubstituted or substituted alkyl or aralkyl or are joined together to form a ring, B is a divalent benzene or naphthalene radical and X^- is an anion.

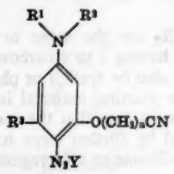
3,597,413

CYANOALKOXYBENZENE DIAZONIUM COMPOUNDS

Michael F. Mizianty, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed June 18, 1968, Ser. No. 737,854
Int. Cl. C07c *113/04*; G03c *1/52*
U.S. Cl. 260—141 3 Claims

A high-speed diazo-type reproduction material suitable for both one-component and two-component diazo-type reproduction processes comprising a diazonium salt of the formula



wherein R^1 and R^2 are selected from alkyl, aralkyl, and the atoms necessary to form a heterocyclic ring with the amino nitrogen atom; R^3 is selected from hydrogen, alkoxy, and halogen; n is an integer of up to 4; and Y is an anion.

Such diazonium salts are especially suited in two-component diazo reproduction processes utilizing ammonia development.

3,597,414

PROCESS FOR THE REDUCTION OF NITROBENZENE-3,4-DICARBOXYLIC ACID TO AZO AND AZOXY COMPOUNDS

Max Gruffaz and Bernard Rollet, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Oct. 30, 1967, Ser. No. 679,237
Claims priority, application France, Nov. 8, 1966, 82,938
Int. Cl. C07d *27/00*
U.S. Cl. 260—143 6 Claims

Azobenzene-3,3′,4,4′-tetracarboxylic acid and azoxybenzene-3,3′,4,4′-tetracarboxylic acid are made by reducing nitrobenzene-3,4-dicarboxylic acid with aluminium in an aqueous alkali metal hydroxide solution.

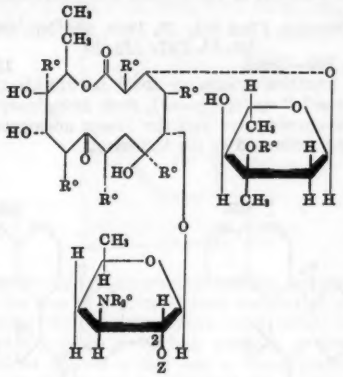
3,597,415

ERYTHROMYCIN AMIDES AND PROCESS FOR PREPARING SAME

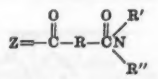
Anthony A. Sinkula, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 14, 1969, Ser. No. 824,679
Int. Cl. C07c *129/18*
U.S. Cl. 260—210E 14 Claims

Erythromycin amides having the following formula:



wherein



$R^\circ = CH_3$

R=the radical obtained by the removal of the two carboxyl groups from a dicarboxylic acid which can be dehydrated to an inner anhydride

R′ and R″=H, alkyl of from 1 to 20 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl of 3 to 8 carbon atoms, inclusive, and aralkyl of not more than 12 carbon atoms

Erythromycin amides are superior tasting erythromycin compounds possessing erythromycin antibacterial activities and the same uses as erythromycin.

3,597,416

SOIL ANTI-REDEPOSITION AGENTS, THEIR USE AND DETERGENT COMPOSITIONS CONTAINING SAME

Francis L. Diehl, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed May 31, 1968, Ser. No. 735,497
Int. Cl. C08b 13/02, 15/02
U.S. Cl. 260—212 8 Claims

A process for the prevention of redeposition of soil during the laundering process by the use of anti-redeposition agents, e.g., an inoic combination of dodecyltrimethylphosphonium chloride and sodium carboxymethylcellulose, and detergent compositions containing said anti-redoposition agents are disclosed.

3,597,417

PROCESS FOR THE PREPARATION OF FATTY ACID ESTERS OF SUGAR GLYCOSIDES

David V. Myhre, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed July 23, 1968, Ser. No. 746,764
Int. Cl. C07c 69/32
U.S. Cl. 260—234 7 Claims

A preferably solvent-free process for the preparation of long chain fatty acid ester (C_{10}–C_{22}) of sugar glycosides is disclosed. The sugar glycoside esters have utility as additives in culinary mixes.

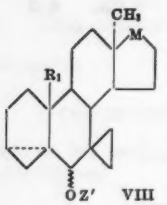
3,597,418

SPIRO[3α,5α - CYCLO - 5α - ANDROSTANE-7,1'-CYCLOPROPANES], THEIR 3β-HYDROXY-Δ⁵ AND 3-KETO-Δ⁴-COUNTERPARTS, AND THE 19-NOR ANALOGUES OF THE FOREGOING

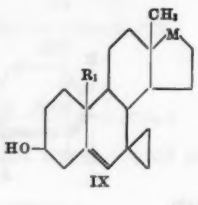
J. Allan Campbell and John C. Babcock, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed July 29, 1969, Ser. No. 845,891
Int. Cl. C07c 173/10
U.S. Cl. 260—239.5 13 Claims

This invention relates to novel spiro[3α,5α-cyclo-5α-androstane-7,1'-cyclopropanes], their 3β-hydroxy-Δ⁵, and 3-keto-Δ⁴-counterparts, and the 19-nor analogues of the foregoing, embraced by the formulae:

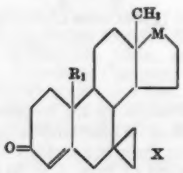


VIII



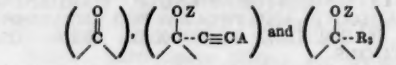
IX

and



X

wherein ∫ is a generic expression denoting α- and β-bonds and mixtures thereof; R_1 is selected from the group consisting of hydrogen and methyl; Z' is selected from the group consisting of hydrogen, alkyl of from one through twelve carbon atoms, and the acyl radical of a hydrocarbon carboxylic acid containing from one through twelve carbon atoms; M is selected from the group consisting of



wherein A is selected from the group consisting of hydrogen, alkyl of from one through four carbon atoms, chlorine, bromine and trifluoromethyl, R_3 is selected from the group consisting of hydrogen, alkyl of from one through twelve carbon atoms and alkenyl of from two through twelve carbon atoms, and Z is selected from the group consisting of hydrogen and the acyl radical of a hydrocarbon carboxylic acid containing from one through twelve carbon atoms. The compounds of Formula VIII have anabolic, androgenic, anti-fertility, cholesterol mobilizing, erthropoietic, estrogenic and antihormonal activities. The compounds of Formulae IX and X have cholesterol and triglyceride suppressing, estrogenic, antiestrogenic and erythropoietic properties. The aforesaid compounds (VIII, IX and X) are consequently useful in treating mammals, including humans, and birds in those conditions where the foregoing properties make the new compounds valuable in medical and veterinary practice.

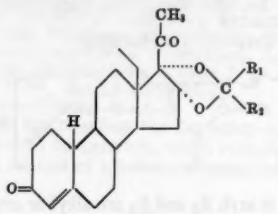
3,597,419

ALKYLIDENEDIOXY-PROGESTERONE COMPOUND

Klaus Prezewowsky, Hermann Steinbeck, and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,075
Claims priority, application Germany, Feb. 29, 1968, P 16 68 688.7
Int. Cl. C07c 173/00
U.S. Cl. 260—239.55 9 Claims

A 16α,17-alkylidenedioxy-18-methyl - 19 - nor - progesterone compound having the formula



wherein R_1 and R_2 are the same or different and are hydrogen, alkyl having 1 to 4 carbon atoms, aralkyl, phenyl or substituted phenyl. The compounds have a high progestational action and in particular an action of protracted duration.

The compounds are made by condensing either:

(a) 16α,17 - dihydroxy - 18 - methyl - 19 - nor - 4-pregnene-3,20-dione or

(b) 16α,17 - dihydroxy - 3 - alkoxy - 18 - methyl - 19-nor - 1,3,5(10)-pregnatriene - 20 - one with a carbonyl compound of the formula

wherein R_1 and R_2 are the same or different and are hydrogen or alkyl having 1 to 4 carbon atoms and wherein R_1 and R_2 may also be aralkyl or phenyl or substituted phenyl in case the starting material is the compound at (a), which process in case that the starting material (b) is used is followed by further steps to convert the 1,3,5 (10)-pregnatriene-20-one to a 4-pregene-3,20-dione.

3,597,420
TERTIARY-AMINO-LOWER-ALKOXY-9-BENZYLIDENE-XANTHENES AND THIOXANTHENES
Sydney Archer, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
No Drawing. Continuation of applications Ser. No. 698,399, Jan. 17, 1968, Ser. No. 615,058, Feb. 10, 1967, and Ser. No. 355,475, Mar. 27, 1964. This application Feb. 17, 1969, Ser. No. 799,915
Int. Cl. C07d *7/46, 65/16*
U.S. Cl. 260—240TC 8 Claims

Lower-tertiary - amino - lower-alkoxy substituted xanthenes and thioxanthenes bearing in the 9-position a secondary or tertiary carbinol group, a benzylidene group or a benzyl group are prepared from the appropriate hydroxy substituted 9-xanthenones or 9-thioxanthenones. They have useful pharmacological properties, e.g., as anti-inflammatory, anti-secretory and anti-ulcerogenic agents.

3,597,421
CEPHALOSPORIN SULFOXIDES
J. Allan Webber, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,815
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 5 Claims

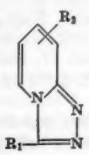
A number of novel 3-functionalizedmethyl cephalosporin sulfoxides which are useful intermediates in the preparation of cephalosporin antibiotics are disclosed and claimed. These novel sulfoxides are obtained by the oxidation of the corresponding cephalosporin compounds.

3,597,422
PYRAZINOISOINDOLES AND A METHOD FOR THEIR PREPARATION
Martin Winn, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
No Drawing. Filed Apr. 10, 1969, Ser. No. 815,212
Int. Cl. C07d *51/72*
U.S. Cl. 260—268TR 3 Claims

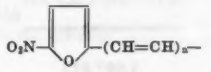
Potassium amide in liquid ammonia effects a novel ring contraction with 2,5-benzodiazocines to yield isoindoline and isoindoles.

3,597,423
5-NITROFURYL-2-s-TRIAZOLO-[4,3-a]-PYRIDINE DERIVATIVES
Fritz Wiedemann, Mannheim-Waldhof, Max Thiel, Mannheim, Kurt Stach, Mannheim-Waldhof, and Wolfgang Voemel, Mannheim, Germany, assignors to Boehringer Mannheim Gesellschaft mit beschrankter Haftung, Mannheim-Waldhof, Germany
No Drawing. Filed Aug. 8, 1967, Ser. No. 659,038
Claims priority, application Germany, Aug. 31, 1966, B 88,700, B 88,701, B 88,702; Apr. 20, 1967, B 92,146; Apr. 22, B 92,194
Int. Cl. C07d *31/42*
U.S. Cl. 260—240 11 Claims

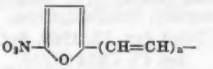
Novel compounds useful as chemo-therapeutic agents because of their outstanding effectiveness against a wide range of micro-organisms, such as, *Staphylococcus aureus, Escherichia coli, Proteus mirabilis, Pseudomonas aeruginosa* and *Streptococcus pyogenes* are disclosed. The compounds are 5 - nitrofuryl - 2-s-triazole-[4.3-a] pyridine derivatives having the following structural formula:



wherein R_1 and R_2 are each members selected from the group consisting of hydrogen, halogen, alkyl, alkoxy, nitro, amino, acylamino, carboxyalkyl, carboxamido, hydroxymethyl, O-acylated hydroxymethyl, O-alkylated hydroxymethyl and



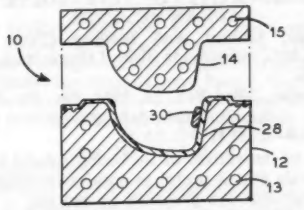
wherein n is 0 or 1, with at least one of said R_1 and R_2 always being



3,597,424
GOLD-YELLOW TO RED-YELLOW CATIONIC DYES AND THEIR PREPARATION
Frank Ray Hunter, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Nov. 7, 1968, Ser. No. 774,184
Int. Cl. C07d *27/38*
U.S. Cl. 260—240.8 6 Claims

A process for preparing gold-yellow to red-yellow cationic dyes by condensing 1,3,3-trimethyl-2-methylene indoline-omega-aldehyde with a tetrahydroquinoxaline in an alcoholic solvent in the presence of a mineral acid catalyst, and the dyes derived therefrom.

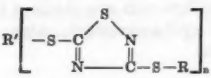
3,597,425
PLASTIC MOLDING PROCESS
Alfred Shaines, Fanwood, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Apr. 14, 1969, Ser. No. 815,934
Int. Cl. B29c *9/00;* B29d *9/08;* B29g *1/00*
U.S. Cl. 264—246 8 Claims



An improved dual compression molding process which includes the step of placing at least one heated preform of dissimilar thermo-setting resin on a nearly vertical surface of a partially cured base molding. A feature of the described process is that one or more preforms of resin can be distributed anywhere on the surface of the partially cured base molding which is to be coated therewith.

3,597,426
UNSYMMETRICAL DISUBSTITUTED PERTHIOCYANATES
Raymond Seltzer, New York, N.Y., assignor to M & T Chemicals Inc., New York, N.Y.
No Drawing. Filed Oct. 2, 1968, Ser. No. 764,626
Int. Cl. C07d *55/50, 91/60*
U.S. Cl. 260—248CS 3 Claims

This invention relates to novel compositions and to a process for preparing a compound comprising recurring units of the formula



in which R is different from R' and each is selected from the group consisting of alkyl, activated aryl, aralkyl, activated alkaryl, alkenyl in which the double bond is not attached on the alpha carbon atoms, and heterocyclic groups, and *n* is an integer 1–3.

3,597,427

1,2-DIHYDROPYRIDO[3,4-e]-as-TRIAZINES

Benjamin Arthur Lewis, Suffern, and Robert Gordon Shepherd, South Nyack, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 13, 1969, Ser. No. 790,833

Int. Cl. C07d *55/10*

U.S. Cl. 260—248AS **6 Claims**

This disclosure describes compounds of the class of 3-substituted-pyrido[3,4-e] - as - triazines and 1,3 - disubstituted-1,2-dihydropyrido[3,4e] - as - triazines useful as antibacterial, antifungal, analgesic and antiinflammatory agents.

3,597,428

SPRAY-DRYING SALTS OF HEXAMETHYLENE TETRAMINE

Ingenuin A. Hechenbleikner, Cincinnati, Ohio, assignor to Carlisle Chemical Works, Inc., Reading, Ohio

Filed May 1, 1969, Ser. No. 820,984

Int. Cl. C07d *55/60*

U.S. Cl. 260—248.5 **14 Claims**

Hexamethylene tetramine salts are prepared by spray drying aqueous solutions of hexamethylene tetramine and acids.

3,597,429

DERIVATIVES OF TETRAZOLYL ALKANOIC ACIDS

Shin Hayao, Elkhart, and Wallace Glenn Strycker, Goshen, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Feb. 15, 1968, Ser. No. 705,632

Int. Cl. C07d *55/56, 57/00*

U.S. Cl. 260—268PH **7 Claims**

A series of derivatives of ω-(5-substituted-2-tetrazolyl) alkanoic acids that is useful as anti-inflammatory agents. These compounds are prepared by reacting a tetrazolyl acyl halide with a suitable amine or a tetrazole with an appropriate haloalkyl amide or ester.

3,597,430

9-AMINO-9-AMINOALKYL DERIVATIVES OF ACRIDAN

Carl Kaiser, Haddon Heights, N.J., and Charles L. Zirkle, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Feb. 26, 1969, Ser. No. 802,653

Int. Cl. C07d *37/22*

U.S. Cl. 260—279 **6 Claims**

9-amino-9-aminoalkyl derivatives of acridan optionally substituted by chlorine, trifluoromethyl or methylthio have neuroleptic and antidepressant activity. The compounds are generally prepared by reaction of a 9-aminoalkyl acridinium acid addition salt with an amine such as ammonia, a lower alkyl amine, benzylamine, phenethylamine, 1-phenyl-2-aminopropane or 2-phenylcyclopropylamine. The acridinium salts are obtained from the corresponding 9-hydroxy-9-aminoalkylacridans by treatment with a mineral acid.

3,597,431

1-(4'-SUBSTITUTED-PHENYL)-2-(PHENYL LOWER ALKYL)-1,2,3,4-TETRAHYDROISOQUINOLINES

John Anthony Coppola, Suffern, N.Y., Rolf Paul, River Vale, N.J., and Elliott Cohen, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 758,588, Sept. 9, 1968. This application July 23, 1969, Ser. No. 844,157

Int. Cl. C07d *35/10*

U.S. Cl. 260—288 **10 Claims**

This disclosure describes compounds of the class of substituted 1-phenyl-1,2,3,4-tetrahydroisoquinolines useful as antifertility and hypocholesteremic agents.

3,597,432

4-PIPERIDINOMETHYL - 3,4 - DIHYDRO-1-BENZOTHIEPIN-5(2H)-ONES

Richard J. Mohrbacher, Fort Washington, and Vasken Paragamian, Dresher, Pa., assignors to McNeil Laboratories, Incorporated

No Drawing. This application is a division of Ser. No. 753,018, Aug. 12, 1968, now Patent No. 3,505,355, which is a continuation-in-part of applications Ser. No. 635,389, May 2, 1967, and Ser. No. 462,403, June 8, 1965, both now abandoned. This application July 22, 1969, Ser. No. 870,931

Int. Cl. C07d *29/34*

U.S. Cl. 260—293.4E **2 Claims**

The compounds are of the class of dihydrobenzothiepin-5(2H)-ones, useful for their respective pharmacological properties, such as hypotensive, vasopressor or antiinflammatory activity, depending upon the type of derivative considered.

3,597,433

10,11 - DIHYDRO - 5,10 - (IMINOMETHANO)-5H-DIBENZO[a,d]CYCLOHEPTENE AND DERIVATIVES THEREOF

Thomas A. Dobson and Martin A. Davis, Montreal, Quebec, Canada, assignors to Ayerst, McKenna and Harrison Limited, Ville St. Laurent, Quebec, Canada

No Drawing. Filed Aug. 19, 1968, Ser. No. 753,723

Int. Cl. C07d *33/10*

U.S. Cl. 260—286R **5 Claims**

There are disclosed herein 10,11-dihydro-5,10-(iminomethano) - 5H - dibenzo[a,d]cycloheptene and its corresponding 12-methyl, 12-ethyl, 12-propyl, 12-butyl, 12-cyclopropylmethyl, 12-benzyl, 12-phenethyl, 12-trimethoxybenzyl, 12-dimethylaminoethyl, 12-diethylaminoethyl, 12-dimethylaminopropyl, 12-diisopropylaminopropyl, 12-pyrrolidinoethyl, 12-piperidinoethyl, 12-(4'-methylpiperazinoethyl, 12-(4'-phenylpiperazinoethyl) and 12-morpholinoethyl derivatives and their hydrochloride salts, as well as the corresponding 13-ketones used as intermediates in the preparation of the above compounds. The compounds have anticonvulsant activity substantially free from ataxic side-effects, and methods for their preparation and use are also disclosed.

3,597,434

BIS-β,β-DI-CYANOVINYLENETETRAHYDROQUINOLINE COMPOUNDS

Max A. Weaver, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

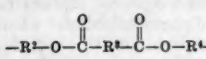
No Drawing. Filed. Oct. 17, 1967, Ser. No. 675,799

Int. Cl. C07d *33/10*

U.S. Cl. 260—287R **4 Claims**

Compounds having two β,β-di-cyanovinylene-1,2,3,4-tetrahydroquinoline moieties linked together via the ring

nitrogen atom of each tetrahydroquinoline moiety by a diester group having the formula



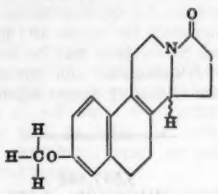
wherein R^2 and R^4 each is alkylene and R^3 is alkylene or an unsubstituted or substituted phenylene group.

3,597,435
SUBSTITUTED PHENOXYMETHYLDIOXOLANES
William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed Apr. 28, 1969, Ser. No. 819,955
Int. Cl. C07d *31/28*
U.S. Cl. 260—297R 6 Claims

Substituted phenoxymethyldioxolanes, e.g., 2-(4-nitrophenyl) - 4 - (4 - chlorophenoxymethyl)-1,3-dioxolane, useful as tranquilizers.

3,597,436
8,9 DEHYDRO-13-AZA ESTRONES
Henderikus Obias Huisman, de Savornin Lohmanlaan 20, and Willem Nico Speckamp, Fideliolaan 79, both of Amstelveen, Netherlands
No Drawing. Filed Mar. 5, 1969, Ser. No. 804,705
Int. Cl. C07d *101/00*
U.S. Cl. 260—289AZ 2 Claims

The specification discloses the 3-methyl ether of 8,9-dehydro-13-aza-estrone having the formula



which is useful as an antifertility agent in mammals and methods and intermediates for synthesizing that compound. Such intermediates include N[2-(6-methoxy-1,2,3,4-tetrahydronaphthylidine)-ethyl]succinimide and 1-carbomethoxy-3,3-bis-benzylcarbamatepropane.

3,597,437
STABILIZED POLYMERIZABLE HETEROCYCLIC NITROGEN COMPOUNDS
Robert E. Reusser, Bartlesville, Okla, assignor to Phillips Petroleum Company
No Drawing. Filed June 13, 1968, Ser. No. 736,601
Int. Cl. C07d *31/20*
U.S. Cl. 260—290 8 Claims

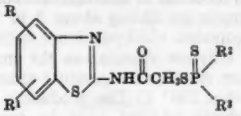
Polymerizable heterocyclic nitrogen compounds are stabilized so as to inhibit coloration and prolific polymerization by admixing therewith a hydrocarbyl-substituted hydroxyphenylalkyl ether.

3,597,438
REDUCTIVE AMINATION OF ALDEHYDES WITH RHODIUM CATALYSTS
Loren D. Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed May 6, 1968, Ser. No. 727,012
Int. Cl. C07c *85/08*; C07d *31/02*
U.S. Cl. 260—296R 8 Claims

Reductive amination of aldehydes in the presence of a rhodium catalyst is conducted at temperatures of from 0° to 125° C. Rhodium catalysts are particularly directive toward secondary amines.

3,597,439
2-AMINOBENZOTHIAZOLE PHOSPHATES AND PHOSPHONATES
Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed June 30, 1969, Ser. No. 837,880
Int. Cl. C07d *91/46*
U.S. Cl. 260—305 7 Claims

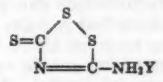
Compounds of the formula



in which R and R^1 are hydrogen or halogen, R^2 is alkoxy, and R^3 is alkoxy or alkyl, and their use as insecticides.

3,597,440
SALTS OF ISOPERTHIOCYANIC ACID
Raymond Seltzer, New York, N.Y., and William J. Considine, Somerset, N.J., assignors to M&T Chemicals Inc., New York, N.Y.
No Drawing. Filed Dec. 18, 1968, Ser. No. 784,916
Int. Cl. C07d *91/04*
U.S. Cl. 260—306.8R 1 Claim

This invention relates to salts of isoperthiocyanic acid of the formula



wherein Y is an acid. Such salts may be used in the control of bacteria, fungi, and marine organisms.

3,597,441
CYANETHYLATION OF 5,5-DIMETHYLHYDANTOIN
Johannes Wollner, Kapellen, Kreis Moers, and Hans-Albrecht Meyer-Stoll, Neukirchen-Vluyn, Germany, assignors to Rheinpreussen Aktiengesellschaft fur Bergbau und Chemie, Homberg (Lower Rhine), Germany
No Drawing. Filed Feb. 12, 1968, Ser. No. 704,548
Claims priority, application Germany, Feb. 14, 1967, R 45,274
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 6 Claims

3 - cyanethyl - 5,5 - dimethylhydantoin or 1,3-dicyanethyl - 5,5 - dimethylhyantoin are produced by reacting 5,5 - dimethylhydantoin and acrylonitrile in an aqueous medium at about 50–150° C. and a pH of about 7–9.5. The compounds produced are useful as intermediates in the pharmaceutical and polymer arts.

3,597,442
METHOD FOR THE PREPARATION OF 2-ARYLBENZIMIDAZOLES
Ronald J. McCaully, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Oct. 31, 1968, Ser. No. 772,399
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 3 Claims

The disclosure describes a method for the direct conversion of o-aminobenzophenone oximes into 2-arylbenzimidazoles. The conversion is carried out by warming a solution of an appropriately substituted o-aminobenzophenone oxime in trifluoroacetic acid on a steam bath for two to eighteen hours. Evaporation of the excess trifluoroacetic acid, and treatment of the residue with ether affords a trifluoroacetate salt of the substituted benzimidazole. Conventional methods may be used to convert the salt to the free base. The products are useful as anthelmintics.

3,597,443
METHOD FOR THE PRODUCTION OF ETHYLENE UREA
Milton Crowther, Salisbury, N.C., assignor to Proctor Chemical Company, Inc., Salisbury, N.C.
No Drawing. Filed Apr. 8, 1968, Ser. No. 719,735
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.7 7 Claims

Ethylene urea substantially free of water-insoluble by-products such as occur in conventional commercial ethylene urea is made by adding about 1 to 10% formaldehyde or an equivalent aldehyde donor to the reaction mass of urea and ethylene diamine as the mass cools down from maximum reaction temperature around 270° C. and before it reaches 200° C. The product is useful in forming formaldehyde adducts used in crease-proofing of textiles.

3,597,444
METHOD OF SYNTHESIZING SELENOUREAS FROM THIOUREAS
Daniel L. Klayman, Chevy Chase, and Robert J. Shine, West Hyattsville, Md., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Apr. 2, 1969, Ser. No. 812,872
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.7 4 Claims

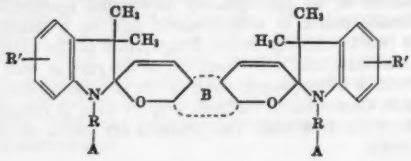
This invention relates to the preparation of selenoureas having either aliphatic or aromatic substituents by displacement of the thiomethyl moiety from S-methylthiopseudoureas by hydroselenide ions in solutions having a pH of 8 to 9. This method provides yields of substituted selenoureas in the range of 60–70 percent. Selenoureas are useful in synthesizing a wide variety of seleno substituted compounds, for example the seleno substituted steroids of U.S. Pat. No. 3,372,173.

3,597,445
1H-ISOINDOLE INTERMEDIATES
William J. Houlihan, Mountain Lakes, and Marcel K. Eberle, Madison, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed June 19, 1968, Ser. No. 738,121
Int. Cl. C07d *27/36*
U.S. Cl. 260—326.1 2 Claims

Process for preparing 5-hydroxy-5-aryl-2,3-dihydro-5H-imidazo[2,1-a]isoindoles, e.g., 5-(p-chlorophenyl)-5-hydroxy-2,3-dihydro-5H-imidazo[2,1-a]isoindole. An appropriately substituted 3-aryl phthalimidine is treated with triethyloxonium borontetrafluoride to provide an intermediate 3-ethoxy-1H-isoindole which is converted to the final product by treatment with ethyleneimine hydrotetrafluoroborate and contacting the resulting product with air or oxygen. These compounds are useful as psychic energizers and anorectics.

3,597,446
BIFUNCTIONAL PHOTOCHROMIC COMPOUNDS OF THE INDOLINO-SPIROPYRAN TYPE
Albert Lucien Poot, Kontich, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium
No Drawing. Filed Sept. 11, 1969, Ser. No. 857,225
Claims priority, application Great Britain, Oct. 3, 1968, 46,947/68
Int. Cl. C07d *27/38*
U.S. Cl. 260—326.11 5 Claims

Bifunctional photochromic compounds which are reversibly colored upon exposure to ultraviolet radiation having the formula:



wherein:

B represents phenyl, diphenyl, diphenylmethylene, diphenylcarbonyl, diphenylsulphone, wherein the phenyl groups may be substituted by nitro, chlorine or bromine,
R represents a straight or branched chain alkylene group having 1 to 11 carbon atoms,
A represents hydrogen or hydroxyl, and
R′ represents hydrogen, when A is hydroxyl or is hydroxyl when A is hydrogen,

are described. These compounds being photochromic are useful in glasses, etc., and in the preparation of polymers.

3,597,447
PROCESS FOR PRODUCING 1-ALKYL (OR ALKENYL)-2-AMINOALKYLPYRROLIDINES AND INTERMEDIATES THEREFOR
Yoshio Kashihara, Osaka, Shozi Fukuzawa, Kyoto, Toshio Imamura, Osaka, Minoru Kakehi, Kobe, and Masayuki Watanabe, Aicht, Japan, assignors to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de France, Paris, France
No Drawing. Filed Feb. 11, 1969, Ser. No. 798,446
Claims priority, application Japan, Feb. 16, 1968, 43/9,683
Int. Cl. C07d *27/52*
U.S. Cl. 260—326.85 5 Claims

By the process of this invention, high purity 1-alkyl (or alkenyl)-2-aminoalkylpyrrolidines are produced. Such high purity aminoalkylpyrrolidines are particularly useful in the preparation of benzamides employed in the treatment of mammals for emesis and nervous disorders. In addition, such pyrrolidines may be used in the production of pyrrolidylquinolines and pyrrolidylquinazolines useful as anti-inflammatory agents when administered to mammals.

3,597,448
2-ARYLBENZO(b)THIOPHEN - 3(2H) - ONE - 1,1 - DIOXIDES AND 2 - ARYLNAPHTHO(2,3-b)THIOPHEN-3(2H)-ONE-1,1-DIOXIDES
Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Original application May 2, 1967, Ser. No. 635,406, now Patent No. 3,502,717, dated Mar. 24, 1970. Divided and this application Dec. 17, 1969, Ser. No. 885,954
Int. Cl. C07d *63/22*
U.S. Cl. 260—330.5 9 Claims

The preparation of novel 2-arylbenzo(b)thiophen-3-(2H)-one-1,1-dioxides and 2-arylnaphtho(2,3-b)thiophen-3(2H)-one-1,1-dioxides and their use as anti-inflammatory agents in the treatment of arthritic disorders.

3,597,449
STABLE GLYCOLIDE AND LACTIDE COMPOSITION
David Anthony Deprospero and Edward Emil Schmitt, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Nov. 16, 1967, Ser. No. 683,480
Int. Cl. C07d *15/10, 15/16*
U.S. Cl. 260—340.2 2 Claims

A composition comprising pure or impure solid glycolide or lactide immersed in tertiary amyl alcohol and/or tertiary butyl alcohol which is essentially anhydrous and free from glycolide or lactide reactive impurities.

Glycolide and lactide may be recrystallized from the composition to produce high yields of substantially pure glycolide or substantially pure lactide following storage of the composition for periods up to about three months.

3,597,450

PREPARATION OF GLYCOLIDE POLYMERIZABLE INTO POLYGLYCOLIC ACID OF CONSISTENTLY HIGH MOLECULAR WEIGHT

Edward Emil Schmitt, Norwalk, Conn., Rocco Albert Polistina, Port Chester, N.Y., and Martin Epstein and David Anthony DeProspero, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 615,931, Feb. 14, 1967. This application Nov. 5, 1969, Ser. No. 874,403

Int. Cl. C07d *15/12, 15/16*

U.S. Cl. 260—340.2 10 Claims

Whereas recrystallization alone, or sublimation alone, of impure glycolide does not, in the majority of cases, render glycolide sufficiently pure to permit its polymerization into polyglycolic acid of the high molecular weight variety required for use as an absorbable surgical suture or ligature, it is surprisingly found that when impure glycolide is subjected to the dual sequential steps of recrystallization and sublimation, the glycolide produced is sufficiently pure to produce consistently high molecular weight polyglycolic acid, provided the sublimation step follows the recrystallization step.

3,597,451

PROCESS FOR THE PREPARATION OF (±) CIS-1,2-EPOXYPROPYL)-PHOSPHONIC ACID AND DERIVATIVES

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 15, 1968, Ser. No. 729,423

Int. Cl. C07d *1/20, 1/22*

U.S. Cl. 260—348 3 Claims

A process for the preparation of (±) (cis-1,2-epoxypropyl)-phosphonic acids, esters or salts thereof which comprises eliminating or extruding carbon dioxide and halogen from a (4,4-dihalo - 6 - methyl-1,3,5-trioxan-2-yl)-phosphonic acid or esters or salts thereof. The 1,2-epoxypropyl phosphonic acids or salts thereof are active anti-bacterial agents.

3,597,452

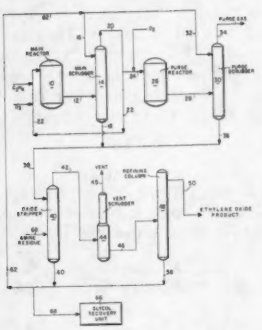
TREATMENT OF ETHYLENE OXIDE PROCESS CYCLE WATER WITH AN AMINE RESIDUE

George J. Laemmle, Port Arthur, and James A. Jeansonne, Port Neches, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Filed Feb. 19, 1968, Ser. No. 706,395

Int. Cl. C07d *14*

U.S. Cl. 260—348.5 2 Claims



In a process for producing ethylene oxide by the direct catalytic oxidation of ethylene, the reaction products are scrubbed with a cycle water to recover the ethylene oxide product. Commercial quality ethylene glycol is also recoverable from this cycle water. A residue stream from the production of morpholine produced by the reaction of diethylene glycol with ammonia has been found to advantageously control the pH of this cycle water and facilitate the recovery of commercially useful ethylene glycol. Similar advantageous results are achieved by adding any amine which has a sufficiently high-boiling point such that it is not removed with the glycol during glycol recovery.

3,597,453

MINERALOCORTICOIDAL 3-ETHERS

Klaus Irmscher, Gerhard Cimbollek, Hans Guenther Kraft, Herbert Halpaap, Juergen Harting, and Hans-Jochen Schliep, Darmstadt, Germany, assignors to E. Merck A.G., Darmstadt, Germany

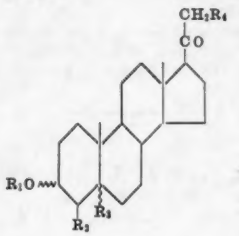
No Drawing. Filed Dec. 4, 1968, Ser. No. 781,269

Claims priority, application Germany, Dec. 13, 1967, P 16 68 444.9

Int. Cl. C07c *169/34*

U.S. Cl. 260—397.47 7 Claims

As steroids exhibiting strong mineralocorticoidal activities and weak glucocorticoidal activities, are compounds of the formula:



wherein

R_1 is lower alkyl or cyclo alkyl;

R_2 and R_3 represent hydrogen or together a double bond; and

R_4 is a free or esterified hydroxy group.

3,597,454

PROCESS OF CYCLIZING NAPHTHALENE DERIVATIVES

Edward George Brain, Leigh, near Reigate, and John Christopher Hanson, Newdigate, England, assignors to Beecham Group Limited, Brentford, Middlesex, England

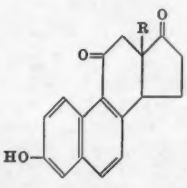
No Drawing. Filed July 15, 1968, Ser. No. 744,697

Claims priority, application Great Britain, July 15, 1967, 32,654/67

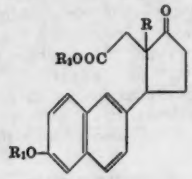
Int. Cl. C07c *167/02*

U.S. Cl. 260—397.45 5 Claims

A cyclopentanophenanthrene derivative of the formula:



wherein R is methyl, are produced by cyclizing a naphthalene derivative of the formula:



wherein R is methyl and R_1 and R_3 are hydrogen or lower alkyl, with pyridine hydrochloride. This process produces greatly increased yields and minimizes the production of by-products. The cyclopentaophenanthrene derivative is obtained in a substantially pure state.

3,597,455

PROCESS FOR MANUFACTURE OF STERILE LECITHIN

Arnold Arons, Highland Park, Lewis Cowen, North Plainfield, and Friedrich Dursch, Freehold, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed May 29, 1969, Ser. No. 829,130
Int. Cl. C07f 9/02; A23j 7/00
U.S. Cl. 260—403 10 Claims

Sterile lecithin is obtained by subjecting a solution of lecithin in a non-aqueous solvent to a sterile filtration followed by lyophilization of the filtrate.

3,597,456

METHOD FOR PREPARING STERILE LECITHIN

Charles Riffkin, Highland Park, and Rudolfo Cilento, North Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed May 20, 1969, Ser. No. 826,258
Int. Cl. A23j 7/00; C07f 9/02
U.S. Cl. 260—403 9 Claims

The presence of from 0.1 to 5% by weight of a salt of an oxy acid of sulfur wherein the apparent oxidation state of the sulfur is not greater than +4 prevents color degradation during the sterilization of lecithin.

3,597,457

FLUOROALKYLAMIDOALKYLENE-SILOXANES

Thomas Alexander Robinson, Kilwinning, and James Jack, Troon, Scotland, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 11, 1968, Ser. No. 711,882
Claims priority, application Great Britain, Mar. 15, 1967, 12,173/67
Int. Cl. C07f 7/10, 7/18
U.S. Cl. 260—404 17 Claims

Siloxanes useful as anti-foaming agents and for surface treatment of glass, textiles, etc., are provided which are the hydrolysis products of silanes of the formula

where Y is hydrogen, chlorine and fluorine, attached to the perfluoro-alkylene group R_f, R is hydrogen or alkyl, R′ is a divalent hydrocarbyl group free from aliphatic unsaturation, R″ is a hydrolyzable group, R‴ is a hydrocarbyl or hydrolyzable group and R′ᵛ is hydrocarbyl.

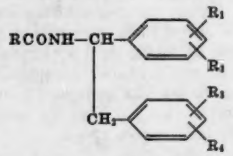
3,597,458

SUBSTITUTED N-1,2-DIPHENYLETHYL FATTY AMIDES AS CHOLESTEREMICS

Yasushi Nakamura, Ibaragi-shi, Michio Kimura, Minooshi, Yoshio Suzuki, Amagasaki-shi, Noritaka Hamma, Nishinomiya-shi, Toshitsugu Fukumaru, Kyoto, Shunji Aono, Toyonaka-shi, and Hideaki Fukushima, Nishinomiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

Continuation-in-part of application Ser. No. 794,038, Jan. 27, 1969. This application Apr. 25, 1969, Ser. No. 819,351
Claims priority, application Japan, Jan. 30, 1968, 43/5,910
Int. Cl. C09f 7/00
U.S. Cl. 260—404 42 Claims

Novel amide compounds having antiatherosclerosis actions which are represented by the formula:



wherein R represents a C_{15}–C_{25}, straight chain or branched-chain, natural or synthetic, saturated or unsaturated aliphatic group having or not having hydroxyl group; R_1, R_2, R_3 and R_4 represent individually a hydrogen atom, a lower alkyl group, a lower alkoxy group or a halogen atom but cannot be hydrogen atoms at the same time.

The above-mentioned amide compounds can be used as drugs. They can be used by adding them to food-stuff additives such as butter and the like for preventing the deposition of cholesterol onto the walls of blood vessels.

3,597,459

NEW ORGANO-METALLIC PEROXIDIC DERIVATIVES OF MOLYBDENUM AND TUNGSTEN AND THEIR PROCESS OF MANUFACTURE

Hubert Mimoun, Paris, Irénée Seree de Roch, Rueil-Malmaison, Lucien Sajus, Croissy-sur-Seine, and Pierre Menguy, L'Etang-la-Ville, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France

No Drawing. Filed Feb. 2, 1968, Ser. No. 702,536
Claims priority, application France, Feb. 7, 1967, 94,063
Int. Cl. C07f 11/00; C07d 1/08
U.S. Cl. 260—429 9 Claims

Organo-metallic peroxidic derivatives of molybdenum and tungsten having the formula H_2MO_6,nA wherein M is molybdenum or tungsten, A is a carboxylic amide or a phosphoramide and n is 1 or 2. These compounds are prepared by reacting diperoxomolybdic acid or diperoxotungstic acid with said amide A. They are useful as epoxidation agents for olefinic double bonds, either as reactants per se or in small amounts as catalysts used together with hydroperoxides, hydrogen peroxide or oxygen in combination with a 9,10-dihydroxyanthracene.

3,597,460

TRANSITION METAL COMPLEXES

David Thomas Thompson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,688
Claims priority, application Great Britain, Apr. 17, 1967, 17,527/67
Int. Cl. C07f 15/00, 11/00, 15/06
U.S. Cl. 260—429 9 Claims

A process for preparing polynuclear transition metal complexes which comprises contacting a first transition metal complex which contains one or more hydrocarbon ligands with a second transition metal complex which

contains one or more ligands which contain or consist of a hydrogen atom or atoms capable of reacting with a hydrocarbons ligand of the first complex to liberate a free hydrocarbon and form the polynuclear product.

3,597,461

HYDRIDE AND CARBONYL TRIPHENYLPHOSPHINE DERIVATIVES OF RUTHENIUM AND OSMIUM

Francois L'Eplattenier and Fausto Calderazzo, Geneva, Switzerland, assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Aug. 13, 1968, Ser. No. 752,159
Int. Cl. C07f *15/00*; C01g *55/00*; B01j *1/10*
U.S. Cl. 260—429 4 Claims

Pentacoordinate complexes of ruthenium and osmium of the general formula

$$M(CO)_{5-n}[P(C_6H_5)_3]_n$$

M=Ru, Os,
n=1,2,
are prepared by reacting the corresponding pentacarbonyls with triphenylphosphine. Also dihydrido compounds of formula $MH_2(CO)_3[P(C_6H_5)_3]_2$ (M=Ru, Os) are described. These dihydrido derivatives can be produced by reacting the corresponding tricarbonylbis (triphenylphosphine) compounds, $M(CO)_3[P(C_6H_5)_3]_2$, with hydrogen. Also the preparation of $OsH_2(CO)_3P(C_6H_5)_3$ from $Os(CO)_4P(C_6H_5)_3$ and hydrogen is disclosed in the present invention. The tetracarbonyl compounds

$$M(CO)_4P(C_6H_5)_3$$

and the dihydrido compounds

$$MH_2(CO)_2[P(C_6H_5)_3]_2$$

are new chemical compounds. The compounds have utility as hydrogenation catalysts.

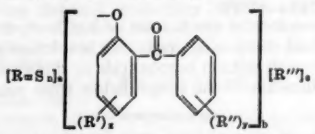
3,597,462

ORGANOTIN PHENOLATES

Toshio Seki, Osaka-shi, Kozaburo Suzuki, Kobe-shi, and Takashi Matsuzaki, Osaka-shi, Japan, assignors to Nitto Kasei Co., Ltd., Osaka, Japan

No Drawing. Application June 16, 1967, Ser. No. 646,465, which is a continuation-in-part of application Ser. No. 567,823, July 26, 1966, now Patent No. 3,498,947. Divided and this application June 24, 1969, Ser. No. 851,519
Claims priority, application Japan, July 26, 1965, 40/44,846
Int. Cl. C07f *7/22*; C08f *45/62*
U.S. Cl. 260—429.7 8 Claims

Organotin compounds of the formula



prepared by the reaction of an aromatic hydroxy carbonyl compound and an organotin oxide or alkoxide may be used as stabilizers for synthetic resins.

3,597,463

PROCESS FOR PREPARING ALKYLTHIOMETHYL SILANES

Donald J. Peterson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Mar. 13, 1967, Ser. No. 622,419, now Patent No. 3,502,731, dated Mar. 24, 1970. Divided and this application Jan. 19, 1970, Ser. No. 4,025
Int. Cl. C07f *7/02*
U.S. Cl. 260—448.2E 4 Claims

(1) Alkylthiomethylmetal compounds prepared by reacting alkyl methyl sulfides with potent metalating agents, e.g., a complex between alkyllithium compounds and alkylenediamines; alkyl- or phenylsodium; or alkyl- or phenylpotassium; (2) the reactions of the alkylthiomethylmetal compounds with mono-, di-, and trihalo and pseudohaloalkyl- and arylsilanes, and (3) new compounds produced thereby containing silicon and sulfur. The organo-silicon and sulfur containing compounds are useful in the synthesis of carbon substituted organosulfur derivatives.

3,597,464

PROCESS FOR THE PRODUCTION OF ALUMINUM ALKYL COMPOUNDS

Kurt Zosel, Oberhausen, Germany, assignor to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany

Continuation of abandoned application Ser. No. 436,176, Mar. 1, 1965. This application May 19, 1969, Ser. No. 828,427
Claims priority, application Austria, Mar. 6, 1964, A 1,977/64
Int. Cl. C07f *5/06*
U.S. Cl. 260—448A 24 Claims

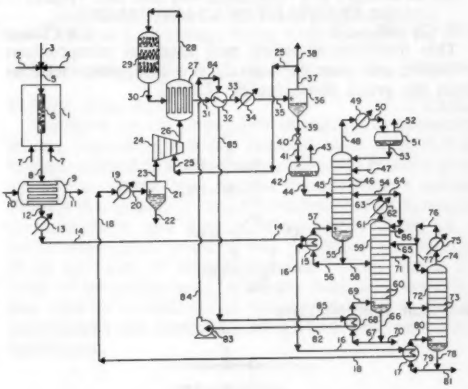
A process for the separation of mixtures of aluminum trialkyls having alkyl groups of different chain lengths to produce a fraction having alkyl groups of more uniform chain length which comprises contacting the mixture with an inert gas which is under super-critical conditions of temperature and pressure and inert to aluminum trialkyls under the process conditions thereby taking up at least part of the mixture in the supercritical gas and recovering from the gas aluminum trialkyl taken up thereby.

3,597,465

PRODUCTION OF SYNTHETIC METHANOL

Maxim Karafian, Cold Spring Harbor, Dinshaw D. Mehta, New York, and Saverio A. Sama, Thornwood, N.Y., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Mar. 4, 1968, Ser. No. 710,068
Int. Cl. C07c *29/16*
U.S. Cl. 260—449.5 5 Claims



An integrated methanol synthesis process is provided in which the reboilers of the distillation units in the methanol purification section are heated in an improved manner, to effectively recover heat and utilize this heat to reboil and vaporize the methanol distillation column bottoms. In one aspect of the invention, crude methanol synthesis gas produced at elevated temperature by the catalytic steam reforming of a fluid hydrocarbon is passed through one or more distillation column reboilers, to cool

the synthesis gas by useful heat exchange which reboils the distillation column bottoms. In another embodiment of the invention, hot converted synthesis gas from the catalytic methanol synthesis converter is cooled by heat exchange with a circulating fluid, which is thereby heated. The heated fluid is circulated through a distillation column reboiler, to provide a heating effect which reboils the distillation column bottoms. The cooled fluid is recirculated for further heat exchange with converted gas.

3,597,466

PREPARATION OF AROMATIC ISOCYANATES

Eric Smith, Madison, Conn., assignor to Olin Mathieson Chemical Corporation

No Drawing. Filed Nov. 21, 1968, Ser. No. 777,867
Int. Cl. C07c *119/04*
U.S. Cl. 260—453P **16 Claims**

The process for preparing an organic isocyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst system comprising a halide of a noble metal and a cyanamide compound of the formula:

where R and R′ are independently selected from the group consisting of hydrogen, and alkyl, aryl, etc. Preferred cyanamide compounds include alkyl, dialkyl, aryl, diaryl, aralkyl, and diaralkyl cyanamides. The noble metal halide is preferably a halide of palladium, rhodium, iridium, rhenium, platinum, and mixtures thereof. The catalyst system may also include molybdenum trioxide or another metal oxide.

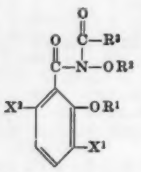
3,597,467

N-(HYDROCARBYLOXYCARBONYL AND HYDROCARBYLTHIOCARBONYL) BENZOHYDROXAMIC ESTERS.

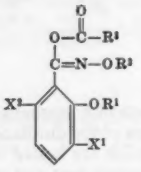
Sidney B. Richter and Eugene F. Barnas, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,247
Int. Cl. C07c *101/66, 154/00, 155/02*
U.S. Cl. 260—455 **4 Claims**

This invention discloses new chemical compositions of matter and more particularly new compounds selected from the group consisting of



and their isomeric form



wherein X^1 and X^2 are halogen; R^1 and R^2 are alkyl, and R^3 is selected from the group consisting of alkyl, alkenyl, alkoxy and alkylthio. The compounds of the above description are useful as acaricides.

3,597,468

COLORED AMINE REACTED POLYMERS

Gregorie Kalopissis and Andre Viout, Paris, France, assignors to L'Oreal, Paris, France

No Drawing. Filed Sept. 2, 1966, Ser. No. 576,811
Claims priority, application Luxembourg, Sept. 6, 1965, 49,441; Jan. 10, 1966, 50,228; June 14, 1966, 51,325; June 16, 1966, 51,345
Int. Cl. C07c *107/06, 121/66*
U.S. Cl. 260—465D **2 Claims**

Hair coloring polymers having anhydride or acid halide groups, which have reacted with dyes having extra nuclear amine and/or hydroxyl groups.

3,597,469

CYCLOALKYL UNSATURATED ESTERS

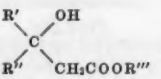
William A. Bradwell, Rensselaer, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed July 29, 1968, Ser. No. 754,525
Int. Cl. C07c *61/16, 69/74*
U.S. Cl. 260—468P **3 Claims**

Novel cycloalkyl unsaturated esters, alcohols and aldehydes useful as agricultural chemicals and as intermediates in the production of other useful materials comprising compounds of the formula:

wherein R′ is a cycloalkyl radical; R″ is selected from lower alkyl, phenyl, and cycloalkyl radicals; and Y is selected from the group of CH_2OH, CHO and COOR‴ wherein R‴ is selected from hydrogen and alkyl.

Novel intermediates produced during the preparation of such compounds comprise compounds of the formula:



wherein R′, R″ and R‴ are as designated above.

3,597,470

PURIFICATION OF BIS(2-HYDROXYETHYL) TEREPHTHALATE

Enrique R. Witt and Bobby J. Bland, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Jan. 24, 1968, Ser. No. 700,042
Int. Cl. C07c *69/82*
U.S. Cl. 260—475PR **3 Claims**

A process for the purification of bis(2 - hydroxyethyl) terephthalate comprising contacting a solution of the terephthalate with sodium borohydride or diborane followed by crystallization of the terephthalate from solution.

3,597,471

PROCESS FOR MAKING BIS(-HYDROXYALKYL) TEREPHTHALATES

Michael Anthony Sapienza, Hendersonville, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 24, 1968, Ser. No. 723,932
Int. Cl. C07c *69/82*
U.S. Cl. 260—475P **4 Claims**

In a continuous process of manufacturing bis-hydroxyalkyl terephthalates where a dialkyl terephthalate, an alkylene glycol and an ester exchange catalyst—the salt of a metal and a weak acid such as zinc acetate are added to an ester exchange process, the improvement of adding the acid which is the corresponding acid of the catalyst having the same anion as the salt of the catalyst, such as acetic acid, to allow the process of preparing bis-

hydroxyalkyl terephthalate, e.g., bis (2-hydroxyethyl) terephthalate, to continue smoothly by inhibiting the formation of catalyst precipitates which would form, plug the ester exchange unit and cause column cycling.

3,597,472

INDANYL-N-METHYLCARBAMIC ACID ESTERS

Rudolf Heiss, Altenfurt, Nuremberg, Wolfgang Behrenz, Cologne-Stammheim, and Ingeborg Hammann, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 31, 1967, Ser. No. 642,301
Claims priority, application Germany, June 18, 1966, F 49,503
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 **5 Claims**

1-(mono and di-methyl)-7-(unsubstituted and methyl or chloro substituted)-indan-4-yl-N-methyl carbamic acid esters which possess pesticidal, especially acaricidal and insecticidal, properties and which may be produced by conventional methods.

3,597,473

METHOD OF PURIFYING ETHYLENEGLYCOL METHACRYLATE

Richard Chromecek, Otto Wichterle, Iva Gavrilova, and Jiri Vacik, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

No Drawing. Filed May 14, 1968, Ser. No. 728,890
Claims priority, application Czechoslovakia, May 18, 1967, 3,603/67
Int. Cl. C07c *69/54*
U.S. Cl. 260—486R **5 Claims**

If ethyleneglycol monomethacrylate is contaminated with ethyleneglycol dimethacrylate, the diester can be removed largely by crystallization of the monoester from a normally liquid solvent medium at a temperature below the melting point of the diester, typically —20° to —50° C. If the crude material contains much ethyleneglycol, the esters may be separated from the glycol by dissolving the mixture in water and salting the esters out as an organic phase which may be further purified by distillation or by low-temperature crystallization.

3,597,474

AMINOALKYLENE SULFONIC ACID CONTAINING PHENOLS

Stanley M. Bloom, Waban, and Paul S. Huyffer, Lynnfield, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Original application July 24, 1967, Ser. No. 655,309, now Patent No. 3,459,548, dated Aug. 5, 1969. Divided and this application Sept. 16, 1968, Ser. No. 810,403
Int. Cl. C07c *143/52, 143/64*
U.S. Cl. 260—507R **8 Claims**

This invention relates to novel immobile reducing agents of the p-aminophenol type which may be defined as zwitterionic (inner) salts of p-aminophenols containing an anchoring or immobilizing moiety.

3,597,475

PURIFICATION OF p-THIONYLAMINOBENZOYL CHLORIDE

Josef Pikl, Glassboro, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 28, 1967, Ser. No. 694,058
Int. Cl. C07c *51/58, 53/00*
U.S. Cl. 260—544 **4 Claims**

Purification of crude p-thionylaminobenzoyl chloride with chlorofluorinated hydrocarbon solvents and preparation of high purity p-aminobenzoyl chloride hydrochloride therefrom by treatment with hydrogen chloride.

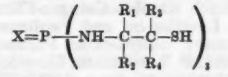
3,597,476

PROCESS FOR PREPARING TRIS (2-MERCAPTOETHYLAMINO) PHOSPHINE OXIDES AND SULFIDES

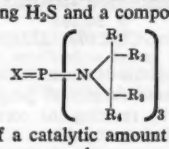
Stephen Paul Edwards and Preston Houston Franke, Jr., Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 4, 1968, Ser. No. 781,246
Int. Cl. C07f *9/22*
U.S. Cl. 260—551 **6 Claims**

Compounds having the formula



wherein X is oxygen or sulfur and R_1, R_2, R_3 and R_4 are hydrogen or lower alkyl, are prepared in the novel reaction comprising reacting by contacting H_2S and a compound of the formula



in the presence of a catalytic amount of an alkali metal hydrosulfide. The compounds are new curing agents for epoxy resins, and the cured resins thus produced are fire-retardant.

3,597,477

PROCESS FOR PREPARATION OF SUBSTITUTED UREAS

Martin L. Weakley, Pryor, Okla., assignor to Nipak, Inc., Dallas, Tex.

Filed Apr. 13, 1966, Ser. No. 542,364
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 **6 Claims**

A process for producing alkyl substituted ureas, such as tetramethyl urea, by the reaction of an alkyl substituted carbamyl chloride, such as dimethylcarbamyl chloride, with an alkyl amine, such as dimethylamine, in which the reactants are heated to a vapor state; and continuously removing normally liquid urea product and unreacted carbamyl chloride by cooling.

3,597,478

PREPARATION OF TETRAMETHYLUREA

Martin L. Weakley, Pryor, Okla., assignor to Nipak, Inc., Dallas, Tex.

No Drawing. Filed Sept. 14, 1967, Ser. No. 671,915
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 **7 Claims**

A method for the preparation of high purity tetramethyl-urea comprising reacting dimethylamine with N,N-dimethylcarbamyl chloride, treating the crude reaction product with a suitable base, such as lime, to form a calcium chloride precipitate; filtering the treated product to remove the precipitate; and distilling the clarified liquid at or below atmospheric pressure, with or without the injection of an inert gas, to remove materials boiling outside the range of tetramethylurea. A further fractional distillation may also be carried out to remove traces of water, dimethylamine and materials boiling above and below tetramethylurea.

3,597,479

SUBSTITUTED ANILINO BENZYL ALCOHOLS

Stephen T. Ross and Charles L. Zirkle, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Original application May 5, 1967, Ser. No. 636,259. Divided and this application Feb. 5, 1970, Ser. No. 9,054
Int. Cl. C07c *143/80*
U.S. Cl. 260—556 **2 Claims**

2-(substituted anilino)-benzyl alcohols, the substituents being chlorine and N,N-diloweralkylsulfamoyl, are use-

ful as antipyretic and anti-inflammatory agents. The compounds are generally prepared by reduction of the corresponding N-(substituted phenyl)-anthranilic acids.

3,597,480
(N-TRIHALOMETHYLTHIO-N-TRIFLUORO-METHYL-AMINO)-BENZAMIDES
Hans Scheinpflug, Leverkusen, Engelbert Kuhle, Bergisch Gladbach, Erich Klauke, Cologne-Flittard, Paul-Ernst Frohberger, Leverkusen, and Ferdinand Grewe, Burscheid, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation-in-part of application Ser. No. 666,918, Sept. 11, 1967. This application Feb. 10, 1970, Ser. No. 10,299
Claims priority, application Germany, Sept. 15, 1966, F 50,206
Int. Cl. C07c *103/32*
U.S. Cl. 260—558 15 Claims

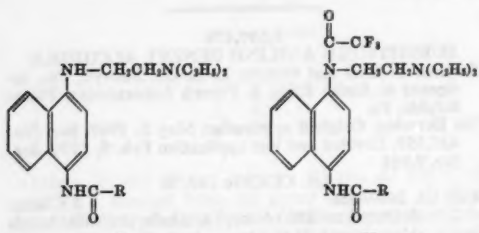
(N - trihalomethylthio-N-trifluoromethyl-amino)-benzamides which possess fungicidal properties and which may be produced by reacting the corresponding fluorocarbonyl - N - trihalomethylthio - N - trifluoromethyl-anilines, in the presence of an acid-binding agent, with amines.

3,597,481
HETEROGENEOUS CATALYST FOR THE LIQUID PHASE HYDROLYSIS OF NITRILES TO AMIDES
Ben A. Tefertiller and Clarence E. Habermann, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Jan. 16, 1969, Ser. No. 791,807
Int. Cl. C07c *97/02*
U.S. Cl. 260—561 9 Claims

Combinations consisting essentially of 10 to 90% by weight of oxides of copper, silver, zinc or cadmium and 10 to 90% by weight of oxides of chromium or molybdenum are used to catalyze the liquid phase conversion of nitriles to amides.

3,597,482
AMINONAPHTHYLAMIDE COMPOUNDS AND MEANS FOR THEIR PRODUCTION
Leslie M. Werber, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.
No Drawing. Filed Feb. 24, 1969, Ser. No. 801,846
Int. Cl. C07c *103/33*
U.S. Cl. 260—562 4 Claims

Aminonaphthylamide compounds in the form of free bases (I) and acid salts are provided by hydrolyzing the corresponding N-(1-naphthyl) - 2,2,2 - trifluoroacetamide (II) where R is a phenyl, cyclohexyl, furyl or thienyl radical or a C_1 to C_{17} hydrocarbon radical, R being optionally substituted by lower alkyl, lower alkoxy, halo, nitro, phenyl or phenoxy. The products are pharmacologically active. In particular, they have antiparasitic properties and are useful schistosomacides.



3,597,483
PRODUCTION OF 1,2-DIAMINES
Erich Haarer and Hubert Corr, Ludwigshafen (Rhine), and Siegfried Winderl, Heidelberg, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Apr. 8, 1968, Ser. No. 719,686
Claims priority, application Germany, Apr. 13, 1967, P 15 93 775.4
Int. Cl. C07c *85/02*
U.S. Cl. 260—563 13 Claims

An improved process for the production of 1,2-diamines by reaction of 1,2-epoxides with ammonia, primary amines or secondary amines in the presence of water, hydrogen and hydrogenation catalysts at elevated temperature and superatmospheric pressure wherein the improvement comprises using a supported hydrogenation catalyst having a large internal surface area. The products are suitable as complex-forming substances for heavy metal ions.

3,597,484
PRODUCTION OF OLEFINICALLY UNSATURATED OXO COMPOUNDS
Herbert Mueller, Frankenthal, Pfalz, and Harald Koehl and Horst Pommer, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Feb. 28, 1968, Ser. No. 708,794
Claims priority, application Germany, Mar. 6, 1967, P 12 75 050.4-42
Int. Cl. C07c *49/20*
U.S. Cl. 260—593 9 Claims

The production of gamma-delta or delta-epsilon olefinically unsaturated oxo compounds (aldehydes or ketones) by heating 5,6-dihydro-4H-pyrans under a pressure of 10 to 300 atmospheres with a small amount of water at 280° to 350° C.

3,597,485
PROCESS FOR THE PRODUCTION OF POLY-FUNCTIONAL AROMATIC ALDEHYDES
William F. Brill, Montgomery Township, N.J., assignor to Princeton Chemical Research Inc., Princeton, N.J.
No Drawing. Filed Oct. 16, 1968, Ser. No. 768,160
Int. Cl. C07c *47/52*
U.S. Cl. 260—599 6 Claims

Process for the selective production of aromatic aldehydes in high yield by subjecting the corresponding alkyl benzene to a vapor phase oxidation in the presence of a tungsten-molybdenum oxide catalyst wherein the tungsten to molybdenum ratio varies between 1:1 and 20:1.

3,597,486
PROCESS FOR MAKING CYCLOPROPYLMETHYL CHLORIDE
Jay Lyman Bishop, Summit, N.J., assignor to Ciba Corporation
No Drawing. Filed Sept. 23, 1968, Ser. No. 761,822
Int. Cl. C07c *19/00, 23/04*
U.S. Cl. 260—648R 3 Claims

1-bromo-3,4-dichlorobutane or its homologs are reacted with metals to yield cyclopropylmethyl chloride or its homologs, which are valuable intermediates or drugs.

3,597,487
CHAIN GROWTH OF ORGANO-MAGNESIUM COMPOUNDS
Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Feb. 25, 1969, Ser. No. 802,267
Int. Cl. C07f *3/02*
U.S. Cl. 260—665R 23 Claims

Hydrocarbyl magnesium compounds (e.g., RMgX, R_2Mg) undergo a chain growth reaction with ethylene

or other normally gaseous monoolefins provided the reaction is performed in an essentially non-complexing solvent—i.e., a solvent which is weakly basic relative to the hydrocarbyl magnesium reactant. Such solvents include paraffinic hydrocarbons, cycloparaffiinic hydrocarbons, aromatic hydrocarbons, and ethers having a basicity less than that of diethyl ether (e.g., diisopropyl ether).

3,597,488

PROCESS FOR MAKING GRIGNARD REAGENTS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,272
Int. Cl. C07f 3/02
U.S. Cl. 260—665G 17 Claims

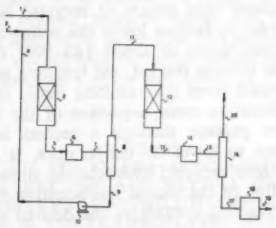
Alpha-olefins undergo an addition reaction with organomagnesium halides in the absence of a catalyst provided the organomagnesium halide is a secondary alkyl, tertiary alkyl, or 2-alkenyl magnesium compound. By conducting this reaction in an ether reaction medium having a basicity equal to or greater than that of diethyl ether the intermolecular addition does not proceed to any appreciable extent beyond the addition of one unit of the olefinic hydrocarbon per hydrocarbyl group in the initial organo-magnesium reactant. Thus, the process proceeds quite cleanly to essentially pure higher molecular organomagnesium compounds.

3,597,489

MANUFACTURE OF NAPHTHENIC HYDROCARBONS BY HYDROGENATION OF THE CORRESPONDING AROMATIC HYDROCARBONS

Quang Dang Vu, Paris, and Robert Odello, Montesson, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Malmaison, Hauts-de-Seine, France

Filed Feb. 24, 1969, Ser. No. 801,333
Claims priority, application France, Feb. 29, 1968, 141,903
Int. Cl. C07c 5/10
U.S. Cl. 260—667 7 Claims



For producing cyclohexane or methylcyclohexane from benzene or toluene respectively, a process is provided comprising introducing all of the aromatic hydrocarbon into a first zone in the form of a liquid mixture containing:

(a) said aromatic hydrocarbon and

(b) a recycle liquid fraction of the products resulting from the first hydrogenation zone; passing molecular hydrogen into said first zone and conducting the hydrogenation in said first zone at between 140 and 300° C. and at a pressure of between 10 and 70 kg./cm.² in contact with a fixed bed hydrogenation catalyst;

cooling resultant gaseous effluent from said first zone to a temperature between 140 and 200° C., to condense 30 to 75% by weight of the hydrocarbon vapors contained therein;

separating the resulting liquid and vapor phases;

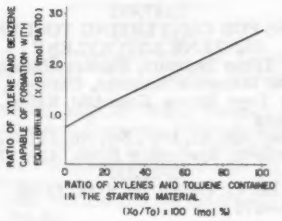
recycling at least a part of said resulting liquid phase to said first zone as said recycle liquid fraction, and passing at least a part of said resulting vapor phase through a following second hydrogenation zone and conducting the hydrogenation in said second zone in the gas phase at a temperature between 140 and 300° C. and at a pressure between 10 and 70 kg./cm.², in contact with a fixed bed of hydrogenation catalyst.

3,597,490

PROCESS FOR CONVERTING TOLUENE TO BENZENE AND XYLENES

Seiya Otani, Takao Iwamura, and Shotaro Hayashi, Ohtsu-shi, and Daisuke Ogawa, Kyoto, Japan, assignors to Toyo Rayon Kabushiki Kaisha, Chuo-ku, Tokyo, Japan

Filed May 27, 1968, Ser. No. 732,376
Claims priority, application Japan, May 31, 1967, 42/34,227; Sept. 2, 1967, 42/56,117
Int. Cl. C07c 3/00, 3/58, 15/08
U.S. Cl. 260—672 1 Claim



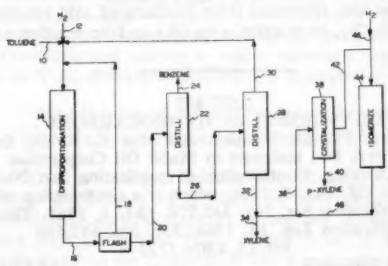
In the conversion of toluene to benzene and xylenes by contacting toluene with a disproportionation catalyst at a temperature of from 300 to 650° C. under a pressure of from 1 to 100 atmospheres in the presence of hydrogen, an improvement which comprises contacting toluene with said catalyst in the presence of 0.5 to 50 mol percent based on the toluene of a C_9 aromatic hydrocarbon, e.g., recycle of trimethylbenzenes. Likewise, unwanted C_8 isomer m-xylene may be supplied along with the feed toluene.

3,597,491

ALKYL TRANSFER OF ALKYL AROMATICS WITH GROUP VI–B METALS ON TYPE Y ZEOLITES

Stephen M. Kovach and Ronald A. Kmecak, Ashland, Ky., assignors to Ashland Oil & Refining Company, Houston, Tex.

Filed Dec. 19, 1968, Ser. No. 785,128
Int. Cl. B01j 11/06; C07c 3/58, 15/08
U.S. Cl. 260—672R 9 Claims



A process for the alkyl transfer of alkyl aromatics including contacting an alkyl aromatic feed material, such as toluene, with a catalyst comprising a Group VI–B

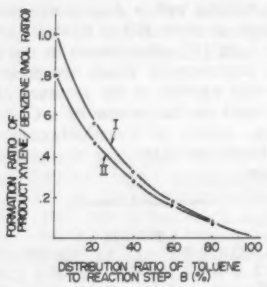
metal, such as chromium, molybdenum, tungsten, deposited on a Type Y zeolite base at a temperature of about 700 to 1100° F., a pressure of about 0 to 2000 p.s.i.g., and a liquid hourly space velocity of about 0.1 to 10, and in the presence of hydrogen introduced at a rate of about 1 to 10 moles hydrogen per mole of hydrocarbon feed. Promoters selected from Group I, Group II, Group IV, and the Rare Earth metals of the Periodic System may be added to the catalyst. Deactivated catalyst may be periodically rejuvenated by discontinuing the introduction of aromatic feed material and purging with hydrogen and the catalyst can be reactivated by calcination in an atmosphere such as air. Where toluene is the feed, the alkyl transfer product may be distilled to separate benzene, toluene and xylenes, the toluene may be recycled to the alkyl transfer step, the xylenes may be crystallized to separate para-xylene from the remaining xylenes, the mother liquor from the crystallization step may thereafter be isomerized to readjust the para-xylene content and the product of the isomerization may be recycled to the crystallization zone.

3,597,492

PROCESS FOR CONVERTING TOLUENE TO BENZENE AND XYLENE

Seiya Otani, Takao Iwamura, Shotaro Hayashi, Daisuke Ogawa, and Masazumi Kanaoka, Ohtsu-shi, Japan, assignors to Toyo Rayon Kabushiki Kaisha, Chuo-ku, Tokyo, Japan

Filed Apr. 21, 1969, Ser. No. 817,802
Claims priority, application Japan, Apr. 27, 1968, 43/28,232
Int. Cl. C07c *3/00, 3/58, 15/08*
U.S. Cl. 260—672 4 Claims



Process for preparing benzene and xylene from toluene, which comprises carrying out disproportionation (A) and demethylation (B) of toluene in parallel while recycling a part of hydrocarbons of not less than 9 carbon atoms separated and recovered from products of said reactions (A) and (B), to reaction step (A) and/or reaction step (B).

3,597,493

CONVERSION OF HYDROCARBONS

Vincent J. Frilette, Yardley, and Mae K. Rubin, Bala Cynwyd, Pa., assignors to Mobil Oil Corporation

No Drawing. Continuation of application Ser. No. 494,228, Oct. 8, 1965, which is a continuation of application Ser. No. 142,778, Oct. 4, 1961. This application Jan. 15, 1968, Ser. No. 697,610
Int. Cl. C07c *5/22*
U.S. Cl. 260—666 14 Claims

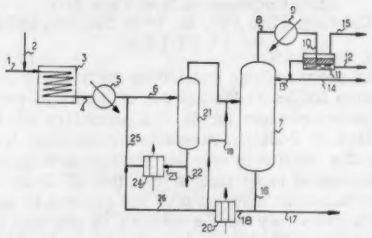
Acid mordenite, a crystalline aluminosilicate having a ratio of silicon atoms to aluminum atoms of about 5 to 1 can be used as a catalyst for various hydrocarbon conversion processes, including isomerization of naphthenes.

3,597,494

STEAM-CRACKING OF HYDROCARBONS

Francois Bigache, Chatou, and Michel Lemee, Asnieres, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants

Filed Sept. 4, 1969, Ser. No. 855,134
Claims priority, application France, Sept. 4, 1968, 165,110
Int. Cl. C07c *3/30;* C10g *9/36*
U.S. Cl. 260—683R 6 Claims



In order to eliminate the deposit of hard materials, such as coke, during the fractionation of products derived from the steam-cracking of hydrocarbons to produce olefins, there is provided a process wherein a mixture of steam with a hydrocarbon feedstock of the naphtha to gas oil range inclusive is heated up to about 500–1200° C., the resulting gaseous cracked product is admixed successively with a first relatively cool stream of recycled liquid hydrocarbons and a second relatively cool stream of recycled hydrocarbons so as to subject the cracked product to a first decrease of temperature down to about 195–230° C. and condense a part thereof, the resulting liquid fraction is separated from the gaseous, uncondensed fraction in a first fractionation zone, a portion of the said liquid fraction, after passage through a first indirect heat exchange zone to lower its temperature, is used as first recycled liquid hydrocarbon stream, the gaseous fraction withdrawn from the first fractionation zone is admixed with a third, relatively cool stream of recycled liquid hydrocarbon, in order to further lower the temperature of this gaseous fraction down to about 140–190° C. and condense another portion thereof, the resulting gaseous fraction is separated from the resulting liquid fraction in a second fractionation zone, a portion of the latter liquid fraction after passage through a second indirect heat exchange zone to lower its temperature, is used as the second and third recycled hydrocarbon streams, and the gaseous fraction of the second fractionation zone is withdrawn, said fraction containing the desired olefins.

3,597,495

THERMOSETTING COATINGS COMPRISING HYDROXY-FUNCTIONAL POLYURETHANE INTERPOLYMERS

Kazys Sekmakas, Chicago, and Joseph E. Gaske, Bridgeview, Ill., assignors to De Soto, Inc., Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 583,092, Sept. 29, 1966, now Patent No. 3,450,791. This application July 1, 1968, Ser. No. 741,300
Int. Cl. C08f *29/20;* C08g *41/04*
U.S. Cl. 260—850 16 Claims

Thermosetting solution coatings are provided by providing in organic solvent medium an hydroxy-functional polyurethane resin in admixture with a heat-hardening aminoplast resin. The polyurethane resin is typically formed by reacting an unsaturated hydroxy-functional polyester resin with a small proportion of organic diisocyanate with the hydroxy-functionality being in excess

in order to provide an hydroxy-functional polyurethane. This polyurethane is then copolymerized with a small proportion of lipophilic monoethylenically unsaturated monomer. The coatings combine unusual hardness with unusual flexibility.

3,597,496

PREPARATION OF CROSS-LINKED ACRYLONITRILE POLYMERS

Roland Dagon and Camille Nordmann, Fribourg, Switzerland, assignors to Lonza Ltd., Gampel, Valais, Switzerland

No Drawing. Filed May 24, 1968, Ser. No. 731,701
Claims priority, application Switzerland, May 25, 1967, 7,378/67
Int. Cl. C08f *27/18*; C08g *37/32*
U.S. Cl. 260—851 **7 Claims**

Cross-linked spinnable homopolymers and copolymers of acrylonitrile containing at least 80 percent by weight acrylonitrile and the balance being unsaturated copolymerizable monomers, are prepared by polymerization with a small amount of a cross-linking agent containing an aldehyde group in a reaction medium of nitric acid containing at least 50 percent HNO_3.

3,597,497

POLYETHYLENE OXIDE AS AN ANTIFOAMING AGENT FOR POLYAMIDES, POLYESTERS, POLYESTERAMIDES, POLYCARBONATES AND POLYUREAS

Koji Ohno, Kurashiki, and Koichi Kawamura, Tamashima, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Japan

No Drawing. Filed Sept. 2, 1966, Ser. No. 576,855
Claims priority, application Japan, Sept. 7, 1965, 40/54,801
Int. Cl. C08g *41/04, 49/04*
U.S. Cl. 260—857 **3 Claims**

A method of producing viscous high molecular weight materials through a heating reaction associated with the removal of volatile materials, the process being characterized in that the heating reaction is effected under the coexistence of an organic polyether material having a molecular weight not less than 10,000. Such organic materials are present in an amount of from 0.01 to 100,000 p.p.m., said organic material being one which, when added in an amount of more than two percent by weight based on the viscous high molecular weight material being produced, can cause a phase separation.

3,597,498

REINFORCED POLYMERS CONTAINING A MATRIX OF PVC OR ABS WITH A CARRIER OF STYRENE-ACRYLONITRILE REINFORCED WITH ANY OF A POLYCARBONATE, NYLON 66 OR POLYOXYMETHYLENE

Donald I. Christensen, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 19, 1968, Ser. No. 738,111
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 **14 Claims**

Disclosed herein are matrix polymers and copolymers reinforced with in situ formed polymeric fibers of high softening point. These fibers are introduced into the matrix polymer by means of a polymeric carrier having a high heat stability and a low flow temperature relative to the matrix polymer. Compositions formed thereby can be molded into articles having increased resistance to deformation under load at high temperatures. The matrix resin may be either polyvinyl chloride or an acrylonitrile-butadiene-styrene resin. The carrier polymer is exemplified by a styrene-acrylonitrile interpolymer reinforced with any of polycarbonate, nylon 66, or polyoxymethylene.

3,597,499

PRODUCTION OF MOLDING MATERIAL BASED ON POLYPROPYLENE AND HAVING IMPROVED IMPACT STRENGTH AT LOW TEMPERATURES

Guenther Daumiller, Ziegelhausen, Herbert Naarmann and Karl Wisseroth, Ludwigshafen (Rhine), Ernst-Guenther Kastning, deceased, late of Assenheim, Pfalz, Germany, by Marie-Louise Hermine Kastning, heiress-at-law and representative of minor heirs, Assenheim, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 30, 1968, Ser. No. 758,184
Claims priority, application Germany, Sept. 5, 1967, P 16 69 721.5
Int. Cl. C08f *47/12, 29/12*
U.S. Cl. 260—876 **2 Claims**

A process for the production of polypropylene-based molding materials having improved impact strength at low temperatures. In this process a polypropylene having a relatively high fraction soluble in heptane is kneaded at elevated temperature with relatively small amounts of an elastomeric polymer containing polymerized units of a 1,3-diene with the addition of free radical-forming catalysts.

3,597,500

MOLECULAR COMPLEXES OF CARBOXYLIC ACIDS WITH POLYMERIC CYCLIC CARBAMATES

Wilhelm Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Application Aug. 19, 1966, Ser. No. 573,488, now Patent No. 3,449,339, dated June 10, 1969, which is a continuation-in-part of application Ser. No. 12,254, Mar. 2, 1960. Divided and this application Feb. 4, 1969, Ser. No. 796,593
Int. Cl. C08f *7/12, 27/00*
U.S. Cl. 260—895 **1 Claim**

Complex obtained by mixing a polyvinyl or poly (substituted vinyl) oxazolidinone or oxazinidinone (with certain optional substituents upon the heterocyclic ring) with benzoic acid, salicylic acid, coal acid, p-vinylbenzoic acid, poly-p-vinylbenzoic acid, 2,4-dichlorophenoxyacetic acid, phenoxyacetic acid, or 2,4,5-trichlorophenoxyacetic acid; manifesting uses similar to those of the said acids when not in complex form, but with improved physical properties such as solubility.

3,597,501

ACRYLIC SYNTHETIC FIBERS HAVING NOVEL STRUCTURE

Hiroshi Aotani, Masaharu Shimamura, and Zenzi Izumi, Iyo-gun, Masamitsu Tanimura, Ohtsu-shi, and Toyotaro Harada, Iyo-gun, Japan, assignors to Toyo Rayon Kabushiki Kaisha, Chuo-ku, Tokyo, Japan

Filed Apr. 22, 1968, Ser. No. 723,338
Claims priority, application Japan, Apr. 24, 1967, 42/25,818
Int. Cl. C08f *15/22, 29/56*
U.S. Cl. 260—898 **6 Claims**

Acrylic fibers containing at least 85 mole percent of acrylonitrile and having a unique structure represented by an X-ray diffraction interference intensity ratio

$$\frac{\text{Meridian interference intensity at } 2\theta = 21°}{\text{Equator line interference intensity at } 2\theta = 17°}$$

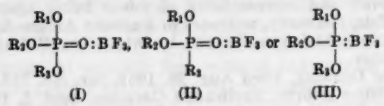
of 0.30 to 0.70 have a durable wool-like waxy and soft feeling. These fibers are produced by heterogeneously copolymerizing acrylonitrile with an acrylate having a long-chain alkyl group with 10–18 carbon atoms in a solvent which dissolves the acrylonitrile but does not dissolve the acrylate, and spinning the resulting solution; or spinning a blend of the said solution and a solution of an ordinary acrylonitrile copolymer. The acrylate should be present in an amount of 2–10 mole percent in the acrylic fiber.

3,597,502
BF_3 COMPLEXES WITH PHOSPHONATES

Robert William McAda, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

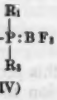
No Drawing. Filed Sept. 11, 1968, Ser. No. 759,235
Int. Cl. C07f 5/02; C07g 3/00; C08b 19/04
U.S. Cl. 260—922 3 Claims

New compounds of the general formula



(I) (II) (III)

and the known compound



(IV)

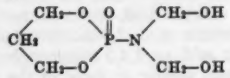
wherein R_1, R_2 and R_3 are each aryl, alkaryl, aralkyl, alkyl or haloalkyl of 1 to about 8 carbon atoms, are useful as new latent catalysts in the oxyalkylation reaction between a vicinal alkylene oxide and a hydroxy-containing organic compound.

3,597,503
CYCLIC PHOSPHOROAMIDATES AND PROCESS FOR MAKING SAME

Bruce N. Wilson, Niagara Falls, and Raymond R. Hindersinn, Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Dec. 6, 1967, Ser. No. 688,371
Int. Cl. C07d 105/04; C08g 22/44
U.S. Cl. 260—937 13 Claims

The invention includes new cyclic phosphoroamidates, new compositions thereof, and a new process for the making of the new cyclic phosphoroamidates. A typical novel cyclic phosphoroamidate of this invention is a compound of the formula:



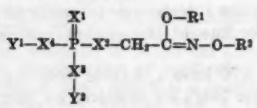
which is an effective fire retardant for various compositions such as polyurethane foam, for example. A compound of this illustrative formula may be prepared by reacting the di-functional amine precursor of the compound, with formaldehyde. The above illustrative compound also may be employed as an intermediate in the production of other compounds and/or compositions described in the specification.

3,597,504
ALKOXYIMINO PHOSPHATES

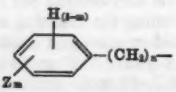
Sidney B. Richter, Chicago, and Ephraim H. Kaplan, Skokie, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Aug. 29, 1968, Ser. No. 756,325
Int. Cl. A01n 9/36; C07f 9/08
U.S. Cl. 260—944 6 Claims

Compounds of the formula



wherein Y^1 and Y^2 are independently selected from the group consisting of alkyl, alkenyl and



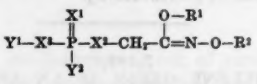
wherein Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino, m is an integer from 0 to 5, and n is an integer from 0 to 3; R^1 and R^2 are alkyl; and X^1, X^2, X^3 and X^4 are independently selected from the group consisting of oxygen and sulfur. This invention also discloses insecticidal and acaricidal compositions comprising an inert carrier, and as an essential active ingredient, in a quantity toxic to insects and acarids, a compound of the above description; and further a method of destroying insects and acarids which comprises applying to said insects and acarids and aforedescribed insecticidal and acaricidal composition.

3,597,505
ALKOXYIMINO PHOSPHONATES

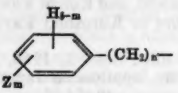
Sidney B. Richter, Chicago, and Ephraim H. Kaplan, Skokie, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Aug. 29, 1968, Ser. No. 759,255
Int. Cl. A01n 9/36; C07f 9/40
U.S. Cl. 260—944 7 Claims

Compounds of the formula



wherein Y^1 and Y^2 are independently selected from the group consisting of alkyl, alkenyl and



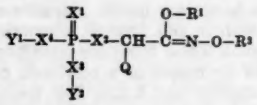
wherein Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino, m is an integer from 0 to 5, and/n is an integer from 0 to 3; R^1 and R^2 are alkyl; and X^1, X^2 and X^3 are independently selected from the group consisting of oxygen and sulfur. This invention also discloses insecticidal and acaricidal compositions comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects and acarids, a compound of the above description; and further a method of destroying insects and acarids which comprises applying to said insects and acarids an aforedescribed insecticidal and acaricidal composition.

3,597,506
O(S)-(1-HYDROCARBYL-2-ALKOXYIMINO-2-ALKOXYETHYL PHOSPHATES

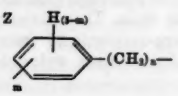
Sidney B. Richter, Chicago, and Ephraim H. Kaplan, Skokie, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Sept. 6, 1968, Ser. No. 758,118
Int. Cl. C07f 9/08, 9/16; A01n 9/36
U.S. Cl. 260—944 6 Claims

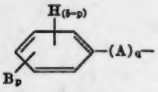
Compounds of the formula



wherein R^1 and Y^2 are independently selected from the group consisting of alkyl, alkenyl and



wherein Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, dialkylamino, alkylsulfoxide and alkylsulfone, *m* is an integer from 0 to 5, and *n* is an integer from 0 to 3; Q is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio and



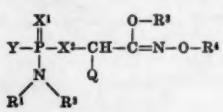
wherein B is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, dialkylamino, alkylsulfoxide and alkylsulfone, *p* is an integer from 0 to 5, A is seected from the group consisting of oxygen, sulfur, alkylene, alkyleneoxy and alkylenethio, and *q* is an integer from 0 to 1; X^1, X^2, X^3 and X^4 are independently selected from the group consisting of oxygen and sulfur; and R^1 and R^2 are alkyl. This invention also discloses insecticidal and acaricidal compositions comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects and acarids, a compound of the above description; and further, a method of destroying insects and acarids which comprises applying to said insects and acarids an aforedescribed insecticidal and acaricidal composition.

3,597,507
O(S)-(1-HYDROCARBYL-2-ALKOXY IMINO-2-ALKOXY)-O(S)-HYDROCARBYL PHOSPHORAMIDATES

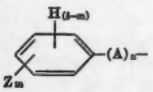
Sidney B. Richter, Chicago, and Ephraim H. Kaplan, Skokie, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Sept. 18, 1968, Ser. No. 760,722
Int. Cl. C07f 9/24; A01n 9/36
U.S. Cl. 260—944 **6 Claims**

Compounds of the formula



wherein Y and Q are independently selected from the group consisting of alkyl, alkenyl, alkoxy, alkenyloxy, alkylthio and



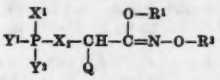
wherein Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino, *m* is an integer from 0 to 5, A is selected from the group consisting of oxygen, sulfur, alkylene, alkyleneoxy and alkenethio, and *n* is an integer from 0 to 1; R^1 and R^2 are independently selected from the group consisting of hydrogen and alkyl; R^3 and R^4 are alkyl; and X^1 and X^2 are independently selected from the group consisting of oxygen and sulfur. This invention also discloses insecticidal and acaricidal compositions comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects and acarids, a compound of the above description; and further, a method of destroying insects and acarids which comprises applying to said insects and acarids an aforedescribed insecticidal and acaricidal composition.

3,597,508
ALKOXYIMINO PHOSPHINATES

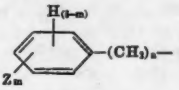
Sidney B. Richter, Skokie, and Ephraim H. Kaplan, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,617
Int. Cl. C07f 9/32; A01n 9/36
U.S. Cl. 260—944 **6 Claims**

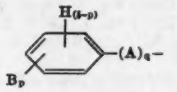
Compounds of the formula



wherein Y^1 and Y^2 are independently selected from the group consisting of alkyl, alkenyl and



wherein Z is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, dialkylamino, alkylsulfoxide and alkylsulfone, *m* is an integer from 0 to 5, and *n* is an integer from 0 to 3; Q is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio and



wherein B is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, dialkylamino, alkylsulfoxide and alkylsulfone, *p* is an integer from 0 to 5, A is selected from the group consisting of oxygen, sulfur, alkylene, alkyleneoxy and alkylenethio, and *q* is an integer from 0 to 1; X^1 and X^2 are independently selected from the group consisting of oxygen and sulfur; and R^1 and R^2 are alkyl. This invention also discloses insecticidal and acaricidal compositions comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects and acarids, a compound of the above description; and further, a method of destroying insects and acarids which comprises applying to said insects and acarids an aforedescribed insecticidal and acaricidal composition.

3,597,509
POLYETHERS CONTAINING PHOSPHORUS AND ALCOHOLIC HYDROXY GROUPS AND THEIR PRODUCTION

Hans-Eberhard Praetzel, Bensberg-Frankenforst, and Herbert Jenkner, Cologne-Deutz, Germany, assignors to Chemische Fabrik Kalk G.m.b.H., Cologne-Kalk, Germany

No Drawing. Continuation-in-part of application Ser. No. 515,165, Dec. 20, 1965. This application June 22, 1967, Ser. No. 647,961
Claims priority, application Germany, Dec. 24, 1964, C 34,742; June 23, 1966, C 39,428
Int. Cl. C07f 9/30; C08g 23/10, 33/16
U.S. Cl. 260—953 **4 Claims**

Process for the production of phosphorus and alcoholic hydroxy group containing polyethers by reacting (a) white phosphorus with about stoichiometric quantities of alkali metal hydroxide, aldehydes and water in the presence of alcohols and (b) after removal of the more volatile components reacting the reaction product which essentially consists of alkali metal salts of bis-(hydroxyalkane) phosphinic acid with epoxy compounds, at least 2 mol of epoxy compound being used per g.-atom of phosphorus in the reaction product and the polyethers produced thereby. According to a variation of the process the reaction product of (a) is treated with a water free mineral acid before

removal of the volatile components and the free bis-(hydroxyalkane)-phosphinic acid is reacted with the epoxy compound rather than its alkali metal salt. The polyether products are useful as components of polyurethane resins.

3,597,510
PREPARATION OF ALLYLPHOSPHONIC ACID AND ESTERS AND SALTS THEREOF

Peter I. Pollak, Scotch Plains, and Harry L. Slates, Florham Park, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 15, 1968, Ser. No. 729,390
Int. Cl. C07f 9/40; A61k 22/00
U.S. Cl. 260—989 **4 Claims**

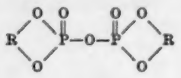
Propenylphosphonic acid and esters and salts thereof are prepared by transitional metal catalyzed double bond isomerization of the corresponding allylphosphonic acid or allylphosphonate. These compounds are useful intermediates in the synthesis of antibiotically active (±)-(cis-1,2-epoxypropyl)phosphonic acid and its salts.

3,597,511
PROCESS FOR MAKING BIS-ALKYLENE PYROPHOSPHATES

Robert S. Olson, Lafayette, Guy H. Harris, Concord, and Robert D. Wilcox, Palo Alto, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 7, 1968, Ser. No. 703,542
Int. Cl. C07d 105/04; C08f 45/58; A01n 9/36
U.S. Cl. 260—980 **9 Claims**

Cyclic pyrophosphate compounds, herein referred to as bis-alkylene pyrophosphates, are produced directly by a simple, one-step process whereby phosphorus pentoxide is reacted with 2 molar equivalents of an alkylene oxide. Representative alkylene oxides are ethylene oxide, 1,2-butylene oxide, 2,3-octylene oxide and epihalohydrin. The bis-alkylene pyrophosphates so produced have the general formula



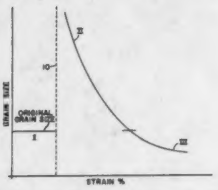
In the above as well as succeeding formulas, R represents a vicinal alkylene or substituted alkylene group. Among other applications, these bis-alkylene pyrophosphates have utility as pesticides and as additives for use in the preparation of flame-resistant polyurethane foams.

3,597,512
GRAIN SIZE CONTROL IN REFRACTORY CARBIDES USING HOT PLASTIC STRAINING AND RECRYSTALLIZATION ANNEALING

Joseph M. Tobin and Leonard R. Fleischer, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 29, 1968, Ser. No. 717,323
Int. Cl. C04b 35/56
U.S. Cl. 264—29 **9 Claims**

A method of controlling the grain size of a refractory metal carbide body comprising recrystallized crystallites of the carbide of a metal of Groups IV–B and V–B of the Periodic Table wherein a body of one or more refractory metal carbides selected from the carbides of the group consisting of Ti, Zr, Hf, V, Nb, and Ta is as an elevated temperature between a point of from about one-half of the melting point of the carbide to a point just below the solidus temperature; and while holding the temperature substantially constant subjecting the carbide to a mechanical strain in an amount equal to at least the critical strain necessary for causing recrystallization of the carbide; removing the stress and annealing the strained body at an elevated temperature in the range of from the straining temperature but not exceeding the solidus temperature (the temperature at which a liquid phase

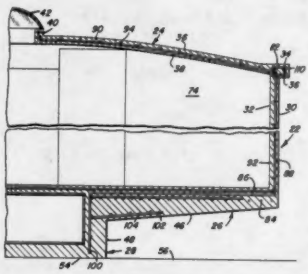


is formed) for a period of time sufficient to cause complete recrystallization of the carbide, whereby the desired recrystallized grain size varies inversely with the amount of strain applied to the carbide.

3,597,513
METHOD OF CONSTRUCTING A BUILDING

Ricardo J. Nevarez Ocampo, Mexico City, Mexico, assignor to Joseph Abelow, Miami Beach, Fla.

Original application Nov. 2, 1967, Ser. No. 680,103, now Patent No. 3,436,052, dated Apr. 1, 1969. Divided and this application Mar. 28, 1969, Ser. No. 811,476
Int. Cl. E04b 1/16; E04g 11/04
U.S. Cl. 264—32 **2 Claims**



A method of constructing a monolithic building of cementitious material in which a mold is supported from the ground surface with a portion thereof open to the ground surface and pouring a complete building in one pour of fluent cementitious material. The mold is vibrated to reduce void spaces, reinforcing rods are employed and partition walls are formed during the single pour.

3,597,514
METHOD FOR PRODUCING POROUS SHEETS, PARTICULARLY DIAPHRAGMS, OF ASBESTOS FREE OF BONDING AGENTS

Philipp Jager, Erlandgen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

No Drawing. Filed Mar. 18, 1968, Ser. No. 714,086
Claims priority, application Germany, Mar. 18, 1967, S 108,908
Int. Cl. C04b 43/04
U.S. Cl. 264—43 **2 Claims**

Described is a method of producing porous asbestos sheets and asbestos diaphragms free of bonding agents.

The method is characterized in that asbestos fibers are first pretreated with alkaline lyes and are subsequently tempered at temperatures of 300 to 700° C.

3,597,515

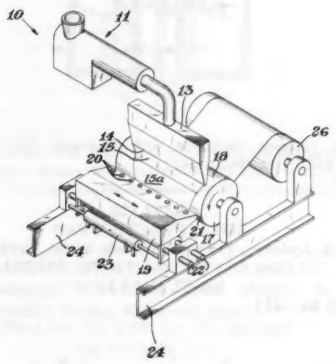
PLASTIC EXTRUSION PROCESS IN CHILL ROLL CASTING OF FILM FOR IMPROVED FLATNESS

Almar T. Widiger, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 22, 1969, Ser. No. 793,143

Int. Cl. B29d 7/02, 7/08

U.S. Cl. 264—89 5 Claims



In chill roll rasting of plastic film, improved flatness is obtained by oscillating the intensity of a flat stream of gas which is applied transverse to the direction of extrusion. By adjustment of the air stream, thick or thin spots may be reduced and distributed across the film.

3,597,516

METHOD OF PRODUCING FILLED MOULDED CONTAINERS

Norman Frederick Harwood, Bognor Regis, Sussex, England, assignor to Regis Machinery (Sussex) Limited, Sussex, England

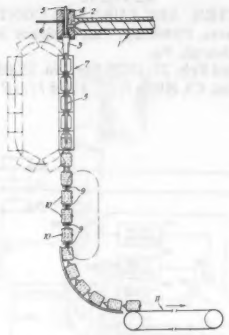
Filed Sept. 26, 1968, Ser. No. 762,679

Claims priority, application Great Britain, Sept. 27, 1967, 44,065/67

Int. Cl. B29c 17/07

U.S. Cl. 264—96 8 Claims

A method of, and apparatus for, producing filled moulded containers by blow-moulding a ribbon of open-ended containers joined end-to-end from a thermoplastics material, introducing a filling into the containers while



they are still part of the ribbon and thereafter sealing the containers in their end regions.

3,597,517

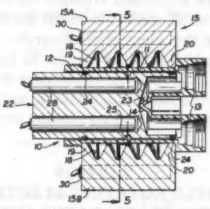
METHOD OF MAKING PLASTIC BELLOWS

Edward M. Smith, Mansfield, Ohio, assignor to The Gorman-Rupp Company, Mansfield, Ohio

Continuation-in-part of application Ser. No. 793,368, Jan. 23, 1969. This application June 9, 1970, Ser. No. 44,801

Int. Cl. B29c 17/07

U.S. Cl. 264—97 17 Claims



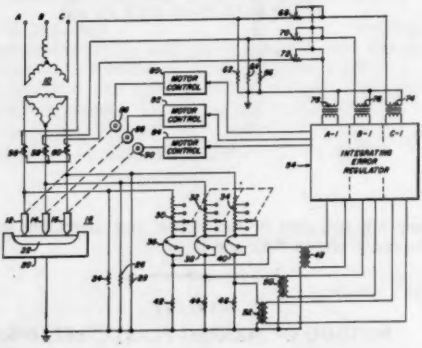
A method of forming a cylindrical bellows out of substantially inelastic plastic material of the polypropylene type by first injection molding a substantially cylindrical tube having certain required end configurations and then, while maintaining the tube at a softening temperature substantially below its melting temperature, applying high fluid pressure within the tube to stretch-mold convolutions and effect molecular orientation therein producing long-lived axial flexibility with minimal radial variation.

ELECTRICAL

3,597,518
ELECTRIC ARC FURNACE CONTROL

Roland W. Roberts, Pittsburg, Pa., assignor to Robicon Corporation, Pittsburgh, Pa.

Filed Feb. 27, 1970, Ser. No. 15,035
Int. Cl. H05b 7/12; F27d 11/10
U.S. Cl. 13—13 **9 Claims**



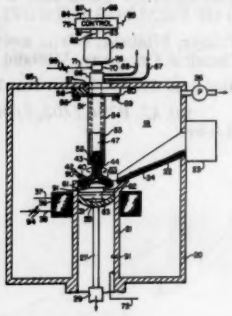
A control system for electric arc furnaces incorporating proportional plus integral control characteristics. The system, which is designed to maintain constant arc impedance, develops an output voltage proportional to input impedance error and then adds a second voltage which increases with time at a rate proportional to the impedance error magnitude. When the combined voltages for a furnace electrode exceed a preset level, the drive motor for that electrode is actuated to move the electrode upwardly or downwardly to maintain the desired arc impedance. In this way, the system will respond quickly to large impedance errors, is insensitive to short term impedance fluctuations, and at the same time has a very high sensitivity to continuing small errors.

3,597,519
MAGNETIC-FIELD ROTATING-ELECTRODE ELECTRIC ARC FURNACE APPARATUS AND METHODS

George A. Kemeny, Export, and Ronald R. Akers, Trafford, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 5, 1970, Ser. No. 8 982
Int. Cl. H05b 7/08
U.S. Cl. 13—18 **22 Claims**

Magnetic field generating means sets up a field within a mold having at least partially electrically conductive material therein to form a melt, the field lines extending through at least a portion of the mold. A rotating electrode has at least the portion thereof which forms the arcing surface rotating in a predetermined plane with respect to the surface of the melt, and an arc takes place between electrode and melt. Where the mold is composed of electrically conductive material, the magnetic field stirs the melt by interaction with current filaments extending from the instant point of arc attachment on the melt to the wall of the mold. The magnetic field focuses the arc between electrode and melt, renders the arc uninfluenced by stray magnetic fields and spurious discharges, assists in preventing glow discharges at reduced pressures, and by creating a magnetic field barrier between the arcing surface of the electrode and the wall of the mold inhibits the arc from striking to the mold. Embodiments include magnetic field generating means mounted adjacent the wall of the mold, or adjacent the wall of a larger furnace enclosure, or on the electrode. A still further embodiment em-

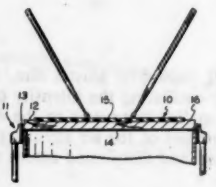


ploys a rotating electrode with magnetic field generating means within the electrode.

3,597,520
DRUM PRACTICE PAD

Henry S. Andrews, 1121 S.E. Lincoln Street, Portland, Oreg.

Filed June 19, 1969, Ser. No. 834,751
Int. Cl. G10d 13/00
U.S. Cl. 84—411 **1 Claim**



A drum practice pad having a solid base portion of relatively hard material into which a circular pad of soft gum rubber is recessed to a depth approximately equal to one-half of the thickness of said rubber, said base portion being of a diameter to permit it to fit on a head of a drum inside the rim thereof but without touching the rim, thereby to permit said base to be supported on the head of the drum or independently on a drum stand or other support. A drummer may practice with drumsticks on that side of the base portion into which said rubber pad is recessed or with drum brushes on the opposite side.

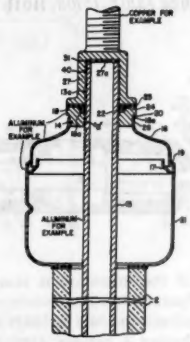
3,597,521
TERMINAL-CAP AND TERMINAL CONNECTOR CONSTRUCTION FOR HIGH VOLTAGE TERMINAL BUSHINGS

Charles W. Tragesser, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 26, 1969, Ser. No. 880,140
Int. Cl. H01b 17/26
U.S. Cl. 174—12 BH **10 Claims**

An improved flexible diaphragm construction is provided for a high voltage terminal bushing in which the weld location between the inner periphery of the flexible diaphragm is at the upper outside extremity thereof, between the diaphragm and the thimble. In order to remove the diaphragm from the lead, an improved sealing gasket construction is provided, wherein a sealing gasket is placed in the thimble groove first, and at least one stop gasket is used

to compress the sealing gasket. This also enables a separation between the thimble, when it is made of aluminum, from the copper terminal connector for electrolysis reasons. Additionally, the electrical transition joint between the aluminum and the copper, where these materials are used, is completely sealed from the atmosphere by such a gasketed construction.

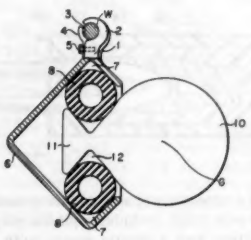


3,597,522

VIBRATION DAMPER FOR CONDUCTORS

Masashi Kobayashi, Kawasaki, Japan, assignor to Asahi Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 22, 1969, Ser. No. 868,400
Int. Cl. H02g 7/14
U.S. Cl. 174—42 **6 Claims**



In a damper comprising a conductor-grasping element and a weight, said element providing a box-shaped housing so that a portion of said weight can be introduced into it, whereby elastic or resilient bodies having suitable shapes are disposed between the spaces defined by the inner surface of said box-shaped housing and outer periphery of that portion of said weight within said housing so that said weight is held resiliently by said housing through said elastic or resilient bodies.

3,597,523

FLOOR-MOUNTED OUTLET BOXES

Kenneth E. Guritz, 570 Emerald Harbor Drive, Sarasota, Fla.

Filed Feb. 17, 1970, Ser. No. 11,969
Int. Cl. H02g 3/10
U.S. Cl. 174—48 **5 Claims**

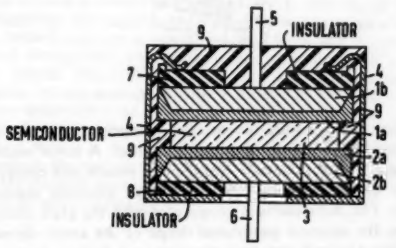
A floor-mounted electrical or communication service outlet box which employs different threaded couplings for mounting the box over hard and soft floor surface (e.g., tile versus carpeting). Additionally, the receptacles are mounted on separate mounting plates which are securely held in place by U-shaped keepers of rectangular spring material. These arrangements facilitate the installation and removal of the receptacles.

3,597,524

SEMICONDUCTOR DEVICE WITH A GAS AND MOISTURETIGHT HOUSING

Horst Schreiner, Nurnberg, and Heinrich Hassler, Wendelstein, both of, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Sept. 22, 1969, Ser. No. 859,794
Claims priority, application Germany, Sept. 21, 1968, P 17 89 014.1
Int. Cl. H01l 9/04
U.S. Cl. 174—52 PE **2 Claims**



A semiconductor device has a semiconductor member and a housing, the latter having portions disposed adjacent the member. Each portion is formed of porous sinter metal and has at least two regions of respectively different space-filling factors. The housing has a plastic portion contiguous to and partially penetrating the regions whereby the interior of the housing is sealed against the ingress of moisture and gas.

3,597,525

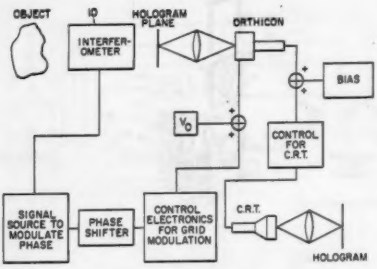
BIAS LEVEL REDUCTION OF INCOHERENT HOLOGRAMS

Adam Kozma, London, England, assignor to The Battelle Developments Corporation, Columbus, Ohio

Filed Mar. 10, 1967, Ser. No. 622,252

Int. Cl. H04n 9/54

U.S. Cl. 178—6.5 12 Claims



Methods and apparatus for reducing the bias level that is present in holograms made with spatially incoherent light by temporally phase-modulating the light in one path of an interferometer.

3,597,526

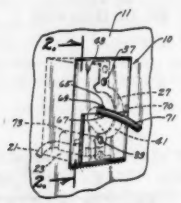
FLUSH BOX FOR PLUG RECEPTACLES

Daniel J. Boatwright, 2616 62nd St., and Lloyd T. Hatcher, 2729 59th St., both of Des Moines, Iowa

Filed Oct. 13, 1969, Ser. No. 865,914

Int. Cl. H02g 3/14

U.S. Cl. 174—66 8 Claims



A flush box for plug receptacles, comprising a box means including an open face at one side thereof. A cover element is mounted on the open face of the box means and comprises a plate element having a door element pivotally mounted therein. The door element cooperates with the plate element to form the external peripheral shape of the cover element. The plate element and door element each have a semicircular access opening formed therein opposite to each other and complementary therewith so as to define a circular access opening when the door element is in its closed position. A flexible conduit extends through the circular access opening into the box means and has a first plug element secured thereto which matingly engages a second plug element in the box means. The first plug element is smaller in size than the door element to permit the first plug element to be easily inserted into the box means or withdrawn therefrom when the door element is in its open position. Means is also provided to yieldably maintain the door in its open position. The cover element also includes means to maintain the door element in its proper closed position.

3,597,527

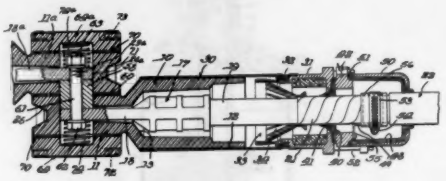
UNIVERSAL POWER CABLE JOINT

George E. Lusk, Downers Grove, Ill., assignor to G & W Electric Specialty Company, Blue Island, Ill.

Filed July 7, 1969, Ser. No. 839,251

Int. Cl. H02g 15/02, 15/08; H01b 17/26

U.S. Cl. 174—73 R 11 Claims



The cable joint of the invention is modular in concept since any joint configuration can be constructed from identical components. The basic module includes a tubular housing of plastic material having a passage extending through the same and which terminates at its forward end in a junction pad. The prepared end of the power cable is provided with a metal connector having a forwardly projecting tang and which extends through the passage of reduced size and into a transverse opening formed in the junction pad.

3,597,528

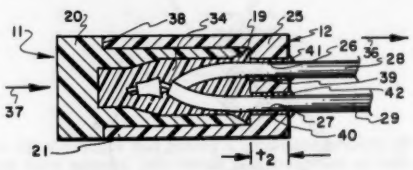
ELECTRICAL CONNECTOR FOR INSULATING AN ELECTRICAL WIRE JOINT

Charles S. Penfield, Camarillo, and Roy Wilson, Jr., Santa Paula, both of, Calif., assignors to Plastic Irrigation Products Company, Oxnard, Calif.

Filed Oct. 27, 1969, Ser. No. 869,735

Int. Cl. H02g 15/08

U.S. Cl. 174—87 5 Claims



An electrical connector capable of being used in a process for insulating a wire joint, includes a plastic plug having a tubular insert section and a plastic casing with an open end sized to receive the tubular insert section and a closed end defining a plurality of ports. A plurality of electrical wires are insulated by plastic tubes that extend through corresponding ports to define a series of passages.

Plastic bonding agent is captivated within a space defined by the plug and casing to encapsulate bared electrical wire ends held together a a joint inside the casing. Another portion of the plastic bonding agent is extruded entirely throughout the annular passages in order to bond the casing and plastic tubes together.

3,597,529

SYSTEM FOR THE CORRECTION OF DIFFERENTIAL PHASE DISTORTION IN A COLOR TELEVISION SIGNAL

Terry J. Hickman, North Syracuse, N.Y., assignor to General Electric Company

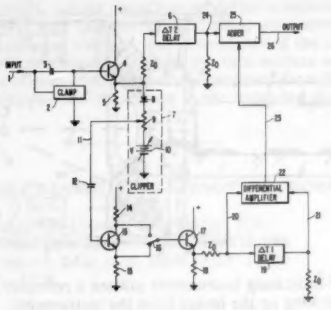
Filed Oct. 3, 1968, Ser. No. 764,735

Int. Cl. H04n 9/02

U.S. Cl. 178—5.4 5 Claims

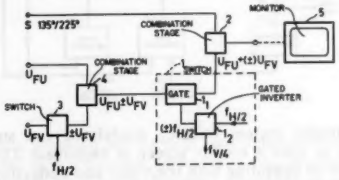
A system for the correction of differential phase distortion in a color television signal in which an active filter is used to process the chroma components of a clipped portion of the video signal to generate a correction signal. The correction

signal is added to the main video signal in quadrature to change differential phase with minimal change of frequency



response and differential gain. The polarity and amount of correction can be varied.

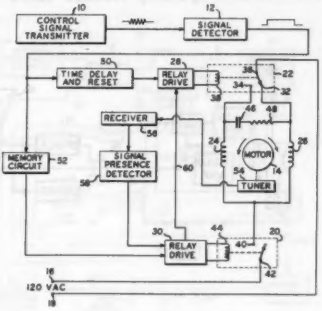
3,597,530
ARRANGEMENT FOR PRODUCING PAL-COLOR TELEVISION TEST SIGNALS
Waldemar Hartwich, Toppenstedt, Germany, assignor to U. S. Philips Corporation, New York, N.Y.
Filed Oct. 28, 1968, Ser. No. 771,148
Claims priority, application Germany, Oct. 26, 1967, P 15 37 299.3
Int. Cl. H04n *9/16, 9/38*
U.S. Cl. 178—5.4 P **2 Claims**



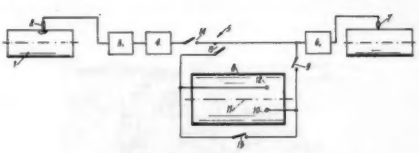
A test circuit for a PAL-TV receiver features a source of PAL-test signals which are gated every other line. From frame to frame the gated lines are alternated between the odd and even numbered lines. The resultant signals are applied to the receiver where any misadjustment errors result in the "Venetian Blind" effect.

3,597,531
BIDIRECTIONAL SIGNAL SEEKING REMOTE CONTROL SYSTEM
Joseph Vincent De Marinis, Batavia; Paul Eshelman Le Fevre, Pavilion, and Joseph Edward Thomas, Batavia, all of, N.Y., assignors to Sylvania Electric Products Inc.
Filed Jan. 19, 1970, Ser. No. 3,611
Int. Cl. H04n *5/44;* **H04b** *1/16*
U.S. Cl. 178—5.8 R **18 Claims**

A single frequency remote control system employing long and short pulses to effect bidirectional rotation of a motor driving a signal seeking UHF television tuner. The system includes an ultrasonic tone transmitter, a receiving transducer, and a signal detector for producing a pulse of duration corresponding to that of the transmitted and received tone. A time delay circuit is coupled to the detector output for actuating a direction control relay in response to a pulse of predetermined duration. Termination of the detector output pulse actuates a second relay to energize the motor windings and thereby cause rotation of the tuner drive shaft in the direction selected by pulse duration. This search mode is sustained by a logic circuit until the presence of both a sync signal and picture carrier indicate a new station has been tuned in. A memory circuit charged during the detector output pulse is operative upon pulse termination to assure the original station is vacated at the start of search.



3,597,532
METHOD AND APPARATUS FOR THE PRODUCTION OF SCREEN-PRINTING FORMS WITH A PATTERN HAVING A MOTIF REPEATED AT LEAST IN THE DIRECTION OF THE LINE
Ferdinand A. De Vos, Amsterdam, and Jan H. Ter Steege, Abcoude, both of, Netherlands, assignors to Werkspoor-Amsterdam N.V., Amsterdam, Netherlands
Filed Nov. 14, 1968, Ser. No. 775,783
Claims priority, application Netherlands, Dec. 1, 1967, 67.16367
Int. Cl. H04n *1/06, 1/28, 5/76*
U.S. Cl. 178—6.6 B **3 Claims**

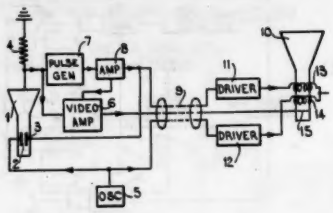


Scanning means scans a pattern area and the analog output signal thereof is converted to digital form. This digital signal is employed for causing an engraving means to produce a first pattern area on a screen printing form and is also employed through the intermediary of a writing means to provide output information on a magnetic storage means. Readout means associated with a storage means utilizes this output information to cause the engraving means to repeat the first pattern area on the screen printing form and the readout means is interconnected with the writing means to reproduce the output information on the storage means so that the pattern area can be reproduced a plurality of times on the screen-printing form.

3,597,533
CHARACTER GENERATION
Gordon Hughes, Manchester, England, assignor to International Computers Limited, London, England
Filed Aug. 21, 1968, Ser. No. 754,230
Claims priority, application Great Britain, Aug. 26, 1967, 39357/67
Int. Cl. H04n *5/14, 5/38*
U.S. Cl. 178—6.8 **6 Claims**

A system for high-speed scanning of graphical symbols in which a line is scanned by a first waveform at a first speed and upon the scan passing over the leading or trailing edge of a symbol, an output is developed and applied to a pulse generator. The pulse generator produces a substantially rectangular pulse whenever the scan passes a leading or trail-

ing edge of a symbol portion, while the pulses are integrated by an appropriate amplifier. The integrated pulses form a second triangular-shaped waveform which is combined with the first scanning waveform such that the scan speed of the first waveform is temporarily reduced below normal scan



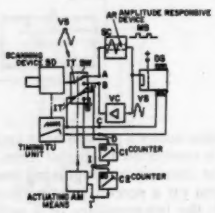
speed and is temporarily increased above normal scan speed before reaching and remaining at a normal speed. The combined scanning waveform is then transmitted to a display device along with the first waveform and appropriate control signals such that the symbol scanned may be remotely displayed.

3,597,534

SYSTEM FOR DISPLAYING THE DISTRIBUTION OF THERMAL RADIATION FROM AN OBJECT

Carl-Erik Granqvist, Lidingo, and Nils Arvid Norman Bjork, Taby, both of, Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Apr. 7, 1969, Ser. No. 813,836
Claims priority, application Sweden, Apr. 11, 1968, 4991/68
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **2 Claims**



An infrared scanning device creates a video signal representing the strength of infrared radiation from successively scanned points of an object. A modified signal, for instance, indicating when the radiation strength is within a predetermined range, is derived, and the video signal and the modified signal are applied to a reproducing device of the cathode-ray type alternatively so as to be displayed on separate portions of the image target.

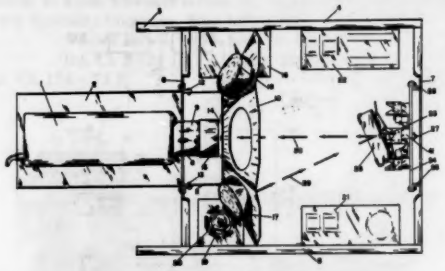
3,597,535

TELEVISION APPARATUS FOR RECORDING AND TRANSMITTING READING FROM WEATHER INSTRUMENTS

Theodore Bruger, Box 336, Sudbury, Ontario, Canada

Filed Nov. 19, 1968, Ser. No. 777,074
Int. Cl. H04n *5/24*
U.S. Cl. 178—7.1 **6 Claims**

An apparatus for recording and transmitting readings from various weather-indicating instruments which can be received on a specific channel of a home television set in a particular community. The television camera which is stationary and is centrally positioned with respect to the various



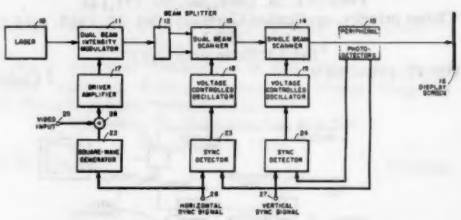
weather-indicating instruments utilizes a reflector for obtaining or picking up the image from the instruments.

3,597,536

DUAL BEAM LASER DISPLAY DEVICE EMPLOYING POLYGONAL MIRROR

Vernon J. Fowler, East Meadow, N.Y., assignor to General Telephone & Electronics Laboratories Incorporated

Filed May 10, 1968, Ser. No. 728,218
Int. Cl. H04n *3/08*
U.S. Cl. 178—7.3 D **16 Claims**



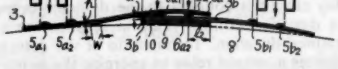
A display system utilizing modulated and steered laser beams to scan a display screen is described. The system is capable of operating with the video and deflection signals of conventional color television signals. A dual-beam intensity modulator at the output of each laser is used to resolve the beam therefrom into first and second components. The components are alternately modulated with the video information and spatially separated. These components are directed, at appropriate angles, to a rotating mirror-type horizontal beam scanner which causes the components to alternately scan in a horizontal plane. A vertical beam scanner is positioned at the output of the horizontal scanner. The components alternately emerging from the vertical beam scanner are directed to and raster scan the display screen.

3,597,537

IMPLOSION-RESISTANT CATHODE-RAY TUBE UTILIZING A METAL BAND

Mikio Kudo, and Kunio Tsuboi, both of Kanagawa-ken, Japan, assignors to Sony Corporation, Tokyo, Japan

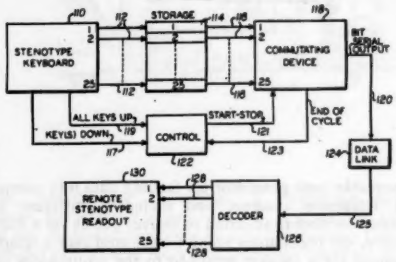
Filed June 2, 1969, Ser. No. 829,500
Int. Cl. H04n *5/645*
U.S. Cl. 178—7.8 **10 Claims**



A cathode-ray tube having a metal band wrapped therearound, the ends of the metal band being welded together. The metal band has projections which are available

for tensioning the metal band lapped end portions which are electrically welded to each other for securing the tensioned band on the tube, at least one of the lapped end portions has projections which extend therefrom to define a restricted region of contact with another of the lapped end portions at which the welding is effected, and at least one of the extending projections is adapted to engage the tube surface so as to space the outermost of the lapped end portions from the end portion overlapped thereby except at the restricted region of contact.

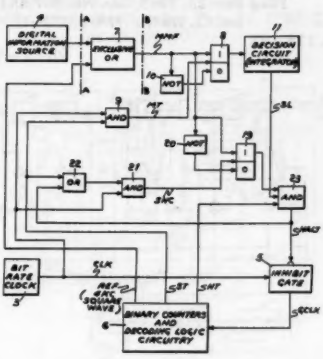
3,597,538
MEANS FOR TRANSMITTING STENOTYPE PRODUCED INPUT
Zvi Binenbaum, 736 Crown St., Brooklyn, N.Y.
Filed Apr. 23, 1969, Ser. No. 818,696
Int. Cl. B41t *3/26;* **H04l** *13/08, 17/00*
U.S. Cl. 178—17.5 **5 Claims**



Apparatus is provided for the real time communication of data generated by a Stenotype keyboard, a type of data typically represented by the simultaneous actuation of one or more keys. The key actuations are recorded by storage devices, and commutation equipment is activated once for each stenographic character to sample the storage devices sequentially and transmit the information in bit serial form over a data link. The commutating device is started by a control circuit primed when one or more keys are depressed, and subsequently actuated when all such keys are released. At the conclusion of a single commutation cycle, the control circuit stops the commutating device. At the other end of the data link is a decoder which converts the bit serial data transmission back into a form which can be understood by a Stenotype readout device at a remote location.

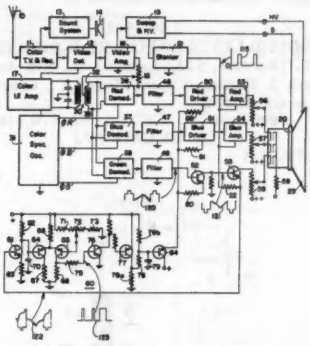
3,597,539
FRAME SYNCHRONIZATION SYSTEM
James M. Clark, Cedar Groove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Dec. 4, 1968, Ser. No. 781,181
Int. Cl. H04l *7/08*
U.S. Cl. 178—69.5 R **10 Claims**

A binary information signal having a given bit rate and a local binary synchronization reference signal are applied to a digital comparison circuit, the output signal thereof indicating a match for mismatch between the binary conditions of successive adjacent bits of the information signal and the reference signal. A flip-flop samples the output of the comparison circuit. A decision circuit responds to the samples from the flip-flop to produce binary "0" when the decision level is exceeded and binary "1" when the decision level is not exceeded. An AND gate coupled to the decision circuit and the comparison circuit provides an output signal only when the comparison circuit indicates a mismatch and the decision circuit produces binary "1" during halt time. This output signal is applied to an INHIBIT gate disposed between a bit rate clock and binary counters to change the counting



of the counters to achieve synchronization in less time than required by prior art frame synchronization systems.

3,597,540
AUTOMATIC BRIGHTNESS CONTROL RESPONSIVE TO BLACK LEVEL OF VIDEO SIGNAL
Ernest C. MacIntyre, Jr., Woodridge, Ill., assignor to Motorola Inc., Franklin Park, Ill.
Filed Apr. 1, 1969, Ser. No. 811,809
Int. Cl. H04n *5/58*
U.S. Cl. 178—7.3 R **7 Claims**



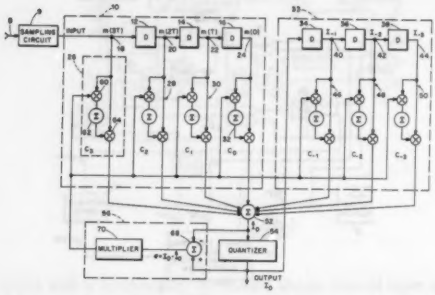
An automatic brightness control circuit in a color television receiver using direct demodulation of the color and brightness signals derives a brightness control voltage by comparing a reference signal, which is indicative of the cutoff or black-level condition of the cathode-ray tube, with the video signals supplied to the base of an NPN transistor output amplifier for the green output channel of the receiver. In one embodiment this is accomplished by the use of a differential clipper which is used to compare a reference voltage indicative of the desired black level with a voltage derived from the emitter of the green final amplifier stage during the scanning interval to provide pulses to an integrating circuit, the output of which is used to vary the DC operating level of the green, blue and red driver amplifiers in a closed-loop control system.

3,597,541

DECISION-DIRECTED ADAPTED EQUALIZER CIRCUIT

John G. Proakis, Waltham; Dennis J. Gooding, Acton, Mass., and James H. Miller, Kenmore, N.Y., assignors to Sylvania Electric Products Inc.

Filed Dec. 23, 1969, Ser. No. 887,653
Int. Cl. H04l 17/16, 25/52
U.S. Cl. 178—88 4 Claims



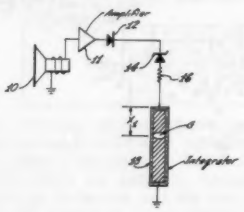
A decision-directed adaptive equalizer circuit employs first and second tapped delay line filters including circuitry to adjust the gain at each tap to a predetermined value. The first tapped delay line filter contains a received signal having intersymbol interference, and the second tapped delay line filter contains decision signals on previously received symbols. A summation circuit combines the output signals from the first and second tapped delay lines to form an estimate signal of the symbol stored in the last section of the first tapped delay line filter. A quantizer circuit quantizes the estimate signal and directs it to a feedback circuit which compares the quantized an unquantized estimate signals to generate an error signal. The error signal is employed to adjust the gain at each tap of the first and second delay line filters.

3,597,542

SOUND LEVEL EXPOSURE INDICATOR

William E. Thornton, 5131 Lancelot St., San Antonio, Tex., and Mack J. Preslar, Chapel Hill, N.C., assignors to said Preslar to said Thornton

Filed Sept. 13, 1967, Ser. No. 670,516
Int. Cl. G01h 3/12
U.S. Cl. 179—1 N 4 Claims



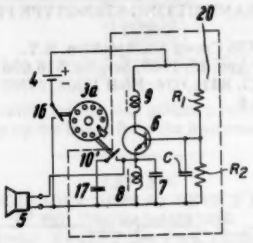
An extremely simple electrical indicator is provided for sensing noise levels and durations, and for providing an indication of the noise level of an environment, insofar as the possibility of ear damage to personnel within the environment is concerned. The indicator includes a microphone for converting the environmental noise into electrical signals, a diode for rectifying the electrical signal from the microphone, and an integrator for integrating the rectified signals on a time base. A threshold device is interposed between the diode and the integrator so that only rectified signals above a predetermined "safe" threshold are actually introduced to the integrator.

3,597,543

CODE GENERATOR FOR FEEDING DATA INTO A TELEPHONE CHANNEL

Rainer Mallebrein, Singen, Hohentwill, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Danube, Germany

Filed Oct. 20, 1967, Ser. No. 676,884
Claims priority, application Germany, Oct. 20, 1966, T T32323
Int. Cl. H04m 11/06
U.S. Cl. 179—2 DP 5 Claims



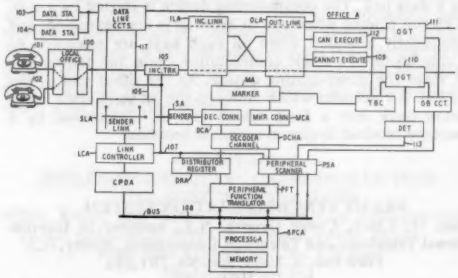
A portable code generator for feeding data into computers via a telephone channel and including different audio frequency oscillators actuated to deliver pulses via a dial or a keyboard, the oscillations being transmitted into a telephone instrument via a speaker attached to the mouthpiece of the telephone and then being fed to the computer.

3,597,544

DATA SWITCHING SYSTEM

James B. Kennedy, Bexley, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 17, 1969, Ser. No. 816,997
Int. Cl. H04m 11/00; H04q 3/42
U.S. Cl. 179—2 10 Claims

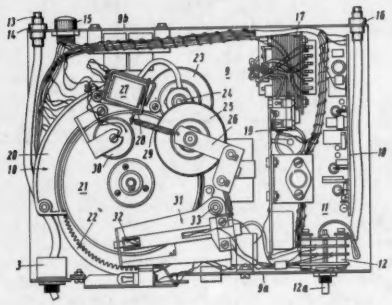


A switching network for data stations is disclosed. Data stations are served by switching centers capable of interconnecting the data stations via wide band facilities. Connections between selected data stations can be "ordered up" from any conventional telephone station not associated with the data stations. The customer desiring to interconnect data stations originates a telephone call which, as it progresses through the network, prepares each switching center for interconnecting the selected data stations.

3,597,545
TELEPHONE-ANSWERING MACHINES WITH UPRIGHT HEAD POSITIONING

Willy Muller, 8702 Zollikon, Zurich, Switzerland; Bruno Wurm, Dachau-Rothschwaige, Germany, and Hermann Haag, Dachau, Germany, assignors to said Wurm and said Haag to said Muller.

Filed Nov. 13, 1968, Ser. No. 775,488
Int. Cl. G11b *21/08, 21/24;* H04m *1/64*
U.S. Cl. 179—6 R 12 Claims

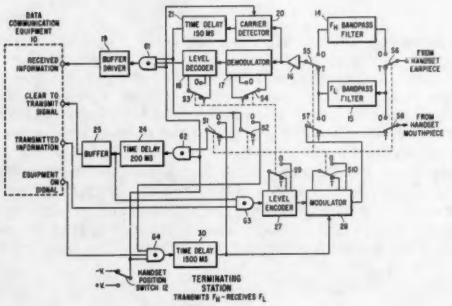


The specification describes a telephone-answering machine, not adapted to record a call, in which the disc carrying the magnetic recording material, a disc for indicating the elapse of available recording time, and other rotary parts are mounted in a single cast frame which in turn is mounted on a chassis.

3,597,546
ACOUSTICAL COUPLING SYSTEM FOR DATA COMMUNICATION EQUIPMENT

Scott R. Zehr, Fisher, Ill., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Sept. 11, 1967, Ser. No. 666,904
Int. Cl. H04m *11/06*
U.S. Cl. 179—2 3 Claims

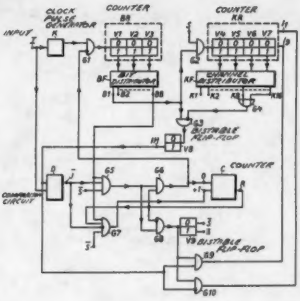


An acoustical coupling system is connected to data communication equipment to provide acoustical coupling to an ordinary telephone handset. The coupling system has a modulator and a demodulator. Gating means are provided to render the modulator and demodulator operative when the telephone handset is positioned for acoustical coupling to the system.

3,597,547
APPARATUS FOR SYNCHRONIZING A PCM-RECEIVER AND A TRANSMITTER

Johan Nils Roll, Stockholm, Sweden, assignor to Telefonaktienbolaget L. M. Ericsson, Stockholm, Sweden

Filed Feb. 6, 1969, Ser. No. 797,127
Claims priority, application Sweden, Feb. 20, 1968, 2,185/68
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS 1 Claim

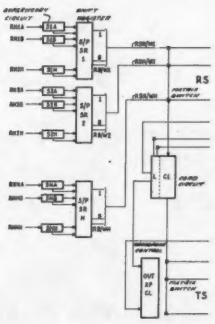


A method for synchronizing the receiver and the transmitter in a PCM-receiver system wherein binary information is transmitted within cyclically occurring channels. The last bit of each of the channels form a synchronization pattern, which is regular but has at least one irregularity which occurs within a predetermined channel. By first using the regular part of the synchronization pattern for synchronizing the bit distributors of the transmitter and the receiver and then the irregularity for synchronizing the channel distributors a very fast two stage synchronization process is obtained.

3,597,548
TIME DIVISION MULTIPLEX SWITCHING SYSTEM

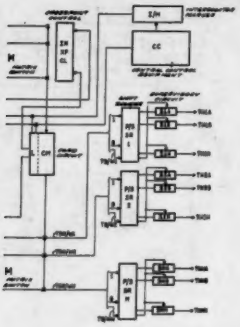
James Walter Drinnan, and John Richard Francis, both of Liverpool, England, assignors to Automatic Telephone and Electric Company, Limited

Filed Mar. 18, 1969, Ser. No. 808,107
Claims priority, application Great Britain, Mar. 19, 1968, 13299/68
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AT 11 Claims



In a pulse code modulation time division multiplex telephone system, the receive junction highways, each comprising 24 channels, are organized in groups of 8 with respect to a receive superhighway. Each receive junction highway handles speech and channel condition information in serial form for 12 originating-go and 12 terminating-return channels which are interleaved. Eight shift registers are located between the 8 junction highways and a receive superhighway and the channels are processed so that the information for each is presented to the superhighway in parallel form in ap-

propriate time slots. Thus a 96-bit frame embraces all the originating-go channels of a superhighway. Cord circuits having 96 32-bit storage locations are provided intermediate several receive and transmit superhighways to which all cord circuits have access over input and output cross-point arrays. Each storage location of a cord circuit provides storage for speech and signalling information for the control of the input



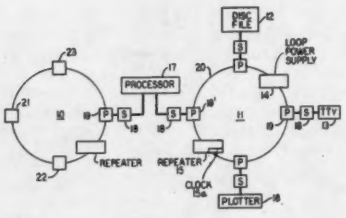
and output cross-points to provide displacement compensation for the two junction channels used for the two directions of transmission. The exchange is organized on a superframe basis, eight frames constituting a superframe. Access to registers is obtained directly from the cord circuits and each of the latter is provided with scanning logic arranged to connect itself over input cross-points to successive superhighways in successive superframe periods.

3,597,549

HIGH SPEED DATA COMMUNICATION SYSTEM

Wayne D. Farmer, Madison Township, Middlesex County, and Edmunde E. Newhall, Rumson, both of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 17, 1969, Ser. No. 842,581
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 AL **19 Claims**



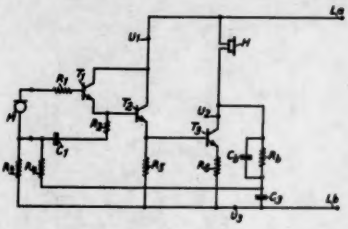
A common continuously closed loop transmission line links all stations in a multistation network, and continuous bipolar bit signal is maintained thereon for providing station clock recovery. A station transmits by overwriting the loop signal with the station outgoing message, and an end of-message code on the loop is followed by a binary ONE bit. A station wishing to transmit, and recognizing the latter code, converts the ONE to a ZERO to signify to down-line stations that it has seized control; and it immediately transmits its message followed by the end-of-message code plus a ONE. Control of the loop is thus similarly passed around the loop to utilize every time slot as long as any station wants to transmit.

3,597,550

BALANCED TELEPHONE INSTRUMENT CIRCUIT

Olaf Sternbeck, Persikogatan 64, Vallingby, Sweden

Filed Dec. 26, 1968, Ser. No. 786,994
Claims priority, application Sweden, Jan. 18, 1968, 661/68
Int. Cl. H04m *1/58*
U.S. Cl. 179—81 A **1 Claim**



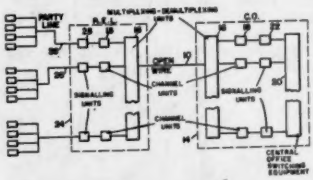
A balanced telephone circuit includes a microphone connected to the input of a transistor amplifier means having two same-phased outputs and a common output. One of the two same-phased outputs is connected to a first wire of a subscriber's line. The telephone receiver is connected across the first wire of the subscriber's line and the other of the same-phased outputs. An artificial load is connected across the other of the same-phased outputs and the second wire of the subscriber's line which is connected to the common output.

3,597,551

IN-BAND SIGNALLING APPARATUS

Knut Arneberg, Larkollen, Norway; James R. Gibbens, San Rafael, and Klaus E. Funke, San Francisco, Calif., assignors to Lynch Commuication Systems, Inc., San Francisco, Calif.

Filed May 29, 1969, Ser. No. 829,003
Int. Cl. H04h *1/08;* **H04m** *1/50*
U.S. Cl. 179—84 VF **11 Claims**



Improved in-band signalling apparatus useful in the conversion of O-type frequency division multiplexing equipment for the multiplexing of rural subscriber lines is disclosed Specifically, a ring-signal-to-voice frequency-signal converter is described which is fully transistorized for battery operation from the 48-volt battery supply of the telephone system and contains no circuit dependent on external AC power for operation. Furthermore, there is provision for transient-free frequency switching, and the circuit is suitable for use in small fully enclosed spaces. Local generation of the ringing signal is provided to obtain complete separation of the ring detection circuit from the subscriber line.

3,597,552

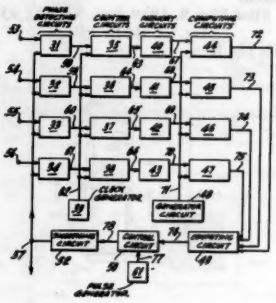
SYSTEM SYNCHRONIZATION SYSTEM FOR A TIME DIVISION COMMUNICATION SYSTEM EMPLOYING DIGITAL CONTROL

Hirokazu Goto, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 24, 1969, Ser. No. 869,306
Claims priority, application Japan, Oct. 25, 1968, 43/78113
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **8 Claims**

A synchronization system for use in a time-division communication system makes almost exclusive use of digital cir-

cuits. Those circuits include means for detecting the phase differences between incoming clock signals from other stations and a reference clock signal of a particular station, and



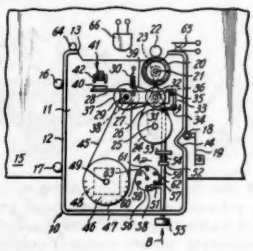
means for controlling the insertion or deletion of pulses into or from a reference clock pulse train in response to the sensed phase differences.

3,597,553

AUTOMATIC TUNING APPARATUS FOR A COMBINATION RADIO AND TAPE PLAYER UNIT

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Oct. 27, 1969, Ser. No. 869,808
Claims priority, application Japan, Oct. 29, 1968, 43/78286
Int. Cl. G11b *31/00;* **H04b** *1/32;* **H03j** *3/00*
U.S. Cl. 179—100.11 **5 Claims**



An automatic tuning apparatus for a radio receiver in combination with a magnetic tape player comprising a first rotary member rotatable at high speed by rotational force of a magnetic tape drive including a capstan, a second rotary member rotatable at low speed in the direction reverse to the first rotary member by the magnetic tape drive, a swing lever with an idler wheel selectively abutting against the first and second rotary members for rotation, a tuning element such as a variable condenser for varying the radio receiving frequency and provided with an operating shaft rotatable with rotation of the idler shaft, and means for swingably controlling the swing lever.

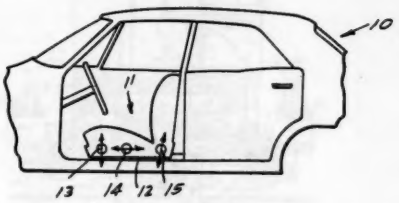
The operating shaft of the tuning element is initially rotated at high speed when the idler wheel abuts against the first rotary member and then rotated at low speed when the idler wheel abuts against the second rotary member. Rotation of the operating shaft is automatically prevented when the idler wheel is away from the second lever at a position where the radio receiver is tuned to a broadcasting radio wave.

3,597,554

MEMORY AND CONTROL DEVICE

Burton L. Siegal, Skokie, Ill., assignor to Peter C. Granata, Jr., Chicago, Ill. and Edward Andrychowski, Jr., Franklin Park, Ill., part interest to each

Filed Aug. 14, 1969, Ser. No. 850,157
Int. Cl. H01h *3/32*
U.S. Cl. 200—52 **6 Claims**



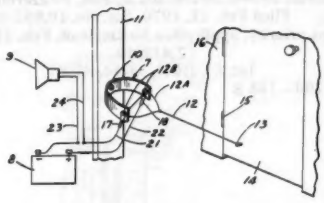
The memory and control device comprises means for positioning a power seat to preset positions and selectively repositioning it to such preset positions and also providing manual control of the seat to place the seat in any position. The present system utilizes a different motor for each of the directions of actuation for the seat and provides mechanical means for establishing the preset positions.

3,597,555

SWITCH ACTUATED BY A PULL CORD

John K. Gould, 13520 Farley Ave., Detroit, Mich.

Filed May 4, 1970, Ser. No. 34,339
Int. Cl. 200 *161;* **H01h** *3/02*
U.S. Cl. 200—61.93 **5 Claims**



A switch for closing any low voltage electric circuit is disclosed. The invention resides in the provision of an elongated, flexible, dielectric element having a conductive wire, a terminal at either end, means at the median to attach it to a support member such as a wall, and a shaped nonconductive pull cord secured to its ends, and arranged to bring the terminals together to make electrical contact to close the circuit when tension is put on the pull cord.

3,597,556

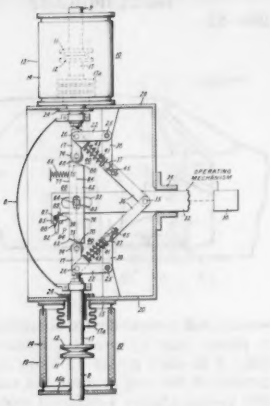
VACUUM-TYPE CIRCUIT BREAKER WITH FORCE-SUPPLEMENTING MEANS FOR INCREASING CURRENT-CARRYING ABILITIES

William T. Sharp, Philadelphia, and Claude H. Archer, Gradyville, both of, Pa., assignors to General Electric Company

Filed Jan. 16, 1970, Ser. No. 3,457
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **11 Claims**

Discloses a vacuum-type circuit breaker in which a wipe mechanism is interposed between the contact rod of the circuit breaker and the operating mechanism that supplies force for closing and opening the circuit breaker. The wipe mechanism comprises a wipe spring through which contact-closing force is transmitted from the operating mechanism to the contact rod during closing. Latching means comprising a

cam mechanism operable when the contact rod is near closed position is provided for exerting a supplemental closing force on the contact rod that is transmitted to the contact rod via a force-transmitting path that effectively bypasses the wipe



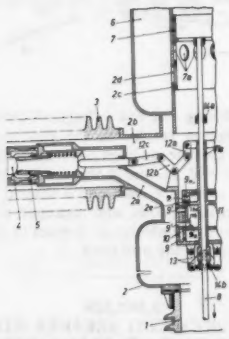
spring. During opening, the latching means is disabled by the operating mechanism before the wipe mechanism allows an effective opening force to be transmitted from the operating mechanism to the contact rod.

3,597,557

COMPRESSED GAS ACTUATED ELECTRICAL SWITCH WITH SLEEVE VALVES

Dieter Floessel, Fislisbach, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Bad, Switzerland

Filed Feb. 12, 1970, Ser. No. 10,852
Claims priority, application Switzerland, Feb. 18, 1969, 2,412/69
Int. Cl. H01h *33/54, 33/83*
U.S. Cl. 200—148 R **4 Claims**



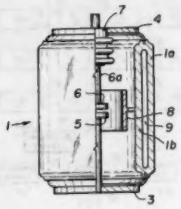
An electrical circuit breaker of the gas blast type includes a double-acting cylinder having the piston element connected to one of the contact members for opening and closing the circuit through the breaker respectively each time the piston is actuated in one direction or the other by successive opening operations of a gas blast valve which functions to deliver high-pressure gas to the circuit breaker contacts and also to one or the other of inlet ports located at opposite ends of the cylinder. The cylinder includes a reversing sleeve valve actuated by movement of the piston in one direction so as to ready the cylinder for piston movement in the opposite direction the next time that the blast valve is opened.

3,597,558

MULTIPLE-WALLED ARC-QUENCHING CHAMBER FOR VACUUM SWITCHING DEVICES

Alfred G. H. Gotsch, Berlin-Kopenick; Heinz Hanisch, Berlin-Friedrichshagen, and Ernst Freund, Berlin-Friedrichshagen, all of, Germany, assignors to Institut Prufeld Fur Elektrische Hochleistungstechnik, Berlin-Lichtenberg, Germany

Filed May 8, 1969, Ser. No. 822,939
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **9 Claims**



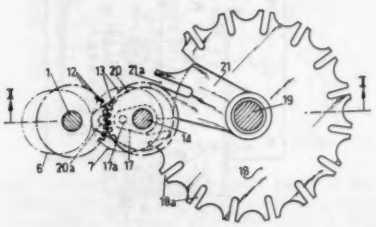
The insulating portion of the housing of an arc-quenching chamber is created in the form of a double-wall cylinder. To reduce the permeability of the chamber to gas, the hollow space between the walls is filled with gas at a pressure which is higher than that in the evacuated chamber but lower than the atmospheric pressure.

3,597,559

GENEVA GEAR SECTORS MOUNTED ON A COMMON SHAFT FOR THE STEPWISE ROTATION OF THE SWITCHING CONTACTS OF ROTARY SWITCHES

Gerardus A. van Riemsdijk, Nijmegen, Netherlands, assignor to Smit Nijmegen Electrotechnische Fabrienken N. V., Netherlands

Filed Feb. 11, 1970, Ser. No. 10,438
Int. Cl. H01h *3/44, 3/40*
U.S. Cl. 200—153 PA **2 Claims**



A driving mechanism for the stepwise rotation of the switching contacts of a rotary switch through angles of different magnitudes by means of different maltese crosses and driving members cooperating with said crosses, said driving members being driven by a common shaft through sets of cooperating normal toothed wheels and cooperating elliptical-toothed wheels said sets of cooperating toothed wheels having equal mean transmission ratios.

3,597,560

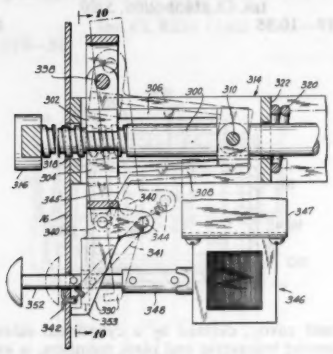
ELECTRIC SWITCH WITH RELEASABLE SCREW-THREADED SPRING CHARGING MEANS

Alexander R. Norden, New York, N.Y., assignor to Empire Switchboard Co. Inc., Brooklyn, N.Y.

Continuation-in-part of application Ser. No. 599,904, Dec. 7, 1966, now Patent No. 3,496,319, dated Feb. 17, 1970. This application July 22, 1969, Ser. No. 843,613
Int. Cl. H01h *3/30, 21/40, 3/40*
U.S. Cl. 200—153 SC **11 Claims**

A normally manually operable electric switch is provided with stored energy mechanism which can be remotely con-

trolled to open the switch without interfering with the direct manual operation to open or close the switch. The stored energy mechanism consists of a threaded rod portion and releasable screw-threaded means engaging said rod portion and allowing a spring to be compressed; upon release of the



releasable screw-threaded means, the spring discharges. The stored energy mechanism is manually operable to render it potentially operable to open the switch automatically by remote control and provision is made to render said mechanism inoperable when said remote control is not desired.

3,597,561

PUSHBUTTON DEPRESSIBLE TO ACTUATED POSITION AGAINST THE FORCE OF ONE BIASING MEANS, AND DEPRESSIBLE TO LATCHED POSITION AGAINST THE FORCE OF TWO BIASING MEANS

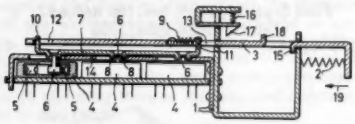
Friedrich Louzil, and Gustave Mrazek, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 5, 1969, Ser. No. 796,787

Claims priority, application Austria, Feb. 8, 1968, A1208/68

Int. Cl. H01h *13/62, 13/50*

U.S. Cl. 200—159 R **5 Claims**



A pushbutton switching unit for switching ON and OFF various operating functions in a tape recorder and playback apparatus which has a button member which is depressed to actuate the switching function. Partial depression of the button will actuate the switching function and release of the button will return the switching mechanism to their rest position. Movement of the pushbutton beyond the initial switching position will result in the operator encountering a certain amount of resistance to further movement of the button beyond the switching position. Application of additional force will overcome the additional resistance and the button and switching mechanism will then be moved into a locked position in which the switching mechanism will remain in the actuated position.

3,597,562

MOVABLE CONTACT STRUCTURE FOR AN ELECTRIC SWITCH

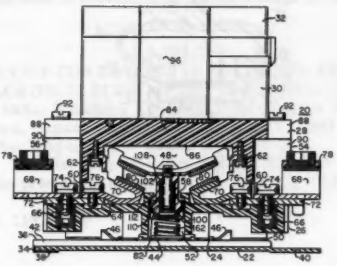
Merlin Y. Turnbull, Brookfield, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed July 23, 1969, Ser. No. 844,151

Int. Cl. H01h *3/02*

U.S. Cl. 200—166 BC **10 Claims**

A movable contact structure having a movable contact member carried on a movable contact carrier by a spring biased rotatable plunger. The contact member has a channel-like cross section and is formed of at least two laminated metals each having different deflection and conductive characteristics so that the weight of the contact member may be reduced and provide a maximum conductive ability commensurate with its resistance to bending. An end of the plunger extends through a notched opening in the contact member so that when the plunger is rotated to one position



the contact member may be separated from the carrier and when the plunger is rotated to a second position, a pin on the end of the plunger engages the material of the contact member to maintain the contact member on the end of the plunger. The plunger also includes a portion that acts as a piston in a bore of the contact carrier to reduce the bounce which occurs when the movable contact surfaces on the contact member initially engage the stationary contacts.

3,597,563

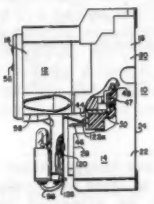
PILOT LIGHT ATTACHEMENT FOR AN ELECTRIC SWITCH

James P. Schmiedel, Brown Deer, and Don J. Arneberg, Milwaukee, both of, Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Feb. 6, 1970, Ser. No. 9,159

Int. Cl. H01h *9/18*

U.S. Cl. 200—167 A **10 Claims**



A pilot light attachment which may be installed on an electric switch without tools. The attachment is particularly suited for use with a manually operated motor-starter-type switch and includes a pair of springlike members that supply the force for maintaining the switch and attachment assembled and an electric connection between the switch and attachment. The portion of the attachment supporting the bulb is connected to the switch by a three-point suspension which spaces the attachment from the current-carrying parts of the switch to provide the switch current-carrying parts with a maximum convective cooling.

3,597,564

ELECTRICAL SWITCH HAVING INTEGRAL OPERATING MEMBER AND BODY

Keith Lewis, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 17, 1969, Ser. No. 858,686

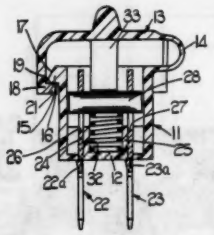
Claims priority, application Great Britain, Sept. 30, 1968, 46,269/68

Int. Cl. H01h *9/02*

U.S. Cl. 200—168 C **1 Claim**

An electrical switch includes a body carrying fixed contacts. A movable contact is engageable with the fixed con-

tacts, and an operating member is movable relative to the body to move the movable contact. The operating member and the body are molded integrally with one another, and are interconnected by a flexible neck integral with the body and



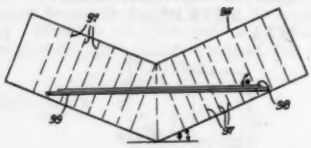
the operating member, the neck permitting the relative movement between the body and the operating member when the operating member is moved to operate the movable contact.

3,597,565

WAVEGUIDE APPLICATOR AND METHOD

Ray M. Johnson, Danville, Calif., assignor to Cryodry Corporation, San Ramon, Calif.

Filed Apr. 17, 1969, Ser. No. 817,097
Int. Cl. H05b *9/06, 5/00*
U.S. Cl. 219—10.55 **43 Claims**



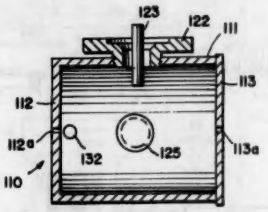
A source of microwave energy excites a waveguide applicator which includes an input waveguide elbow, an output waveguide elbow and an elongated waveguide heating chamber coupled between the two elbows. Each of the elbows and the chamber are transversely defined by a pair of opposing broad walls and a pair of opposing sidewalls. The broad walls in the heating chamber of the applicator, excited in the TE_{10} mode, generate an electric field which decreases its angle of incidence with the material being treated as the electric field intensity decreases. This uniformly heats the material along its width. In a preferred embodiment, the top and bottom broad walls in the heating chamber are inclined symmetrically upwardly about the longitudinal center plane of the chamber so that the cross section of the heating chamber has a slight V-shape, and the angle of incidence of the electric field vector decreases away from the center of the chamber and toward the sidewalls. The material to be heated enters and exits the applicator through reject filters coupled to slots provided in the broad walls of the input and output elbows respectively. The reject filters prevent the escape of microwave energy through the entrance and exit locations without absorbing power. A water load is provided in the applicator downstream of the exit slot to absorb excess energy under varying loads; and means are provided to circulate air through the chamber to carry away moisture or cooking gases. A slot extends longitudinally along the center of the bottom broad wall. The slight V-shape of the heating chamber forms a natural trough for carrying fats, oils, etc. from the material being heated through the bottom slot under gravity flow.

3,597,566

RESONANT CAVITY MICROWAVE APPLICATOR

Ray M. Johnson, Danville, and Franklin J. Smith, Diablo, both of, Calif., assignors to Cryodry Corporation, San Ramon, Calif.

Filed Aug. 22, 1969, Ser. No. 852,374
Int. Cl. H05b *9/06, 5/00*
U.S. Cl. 219—10.55 **6 Claims**



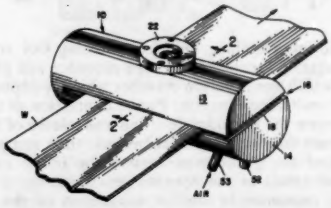
A resonant cavity, defined by a cylindrical sidewall and first and second transverse end plate members, is excited in the TM_{010} mode by a source of microwave energy to generate an electric field with lines extending generally parallel to the axis of the sidewall of the cavity. The intensity of the electric field increases in a radial direction of the cavity from a minimum at the sidewall to a maximum along the axis. A thin, continuous slot is provided in the sidewall and end plates so that a filament can be inserted into the cavity in an axial disposition and then moved lengthwise along the axis of the cavity for drying. Air is preferably circulated through the cavity for carrying away moisture and for cooling the sidewalls of the cavity. An adjustable stub, mounted for radial movement in the cavity, tunes the resonant frequency of the cavity to match the frequency of the source. A coupling probe is located on one of the end plates; and the tuning stub is adjusted to maximize power coupled to the probe for tuning.

3,597,567

MICROWAVE APPLICATOR FOR HEATING CONTINUOUS WEB

Ray M. Johnson, 118 Verde Mesa, Danville, Calif.

Filed Sept. 24, 1969, Ser. No. 860,657
Int. Cl. H05b *9/06, 5/00*
U.S. Cl. 219—10.55 **5 Claims**



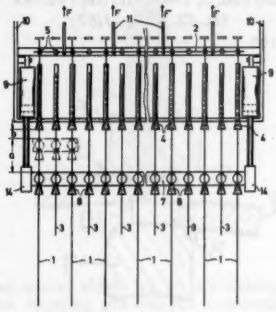
A resonant cavity in the form of a right circular cylinder is excited in the TM_{010} mode by a source of microwave energy to generate an electric field with lines extending generally parallel to the axis of the cylindrical sidewall of the cavity. A pair of aligned slots are formed at diametrically opposite locations in the cavity sidewall for passing the web through the applicator in a plane which passes through the axis of the sidewall. The intensity of the electric field within the applicator increases in a radial direction of the cavity from a minimum at the sidewall to a maximum along the axis. Thus, the electric field, at its greatest intensity, extends parallel to the plane of the web for maximum coupling of energy to the web. Air is circulated through the applicator for carrying away moisture and for cooling the sidewalls of the cavity. An adjustable stub, mounted for radial movement in the cavity, tunes the resonant frequency of the cavity to match the frequency of the source.

3,597,568

REINFORCING STEEL MATS

Hans Rach, Buttgen near Neuss, Germany, assignor to Bau-Stahlgewebe GmbH, Dusseldorf-Oberkassel, Germany

Filed Mar. 20, 1968, Ser. No. 714,568
Claims priority, application Germany, Mar. 27, 1967, B 91 749 Ib/7d
Int. Cl. B23k *11/02*
U.S. Cl. 219—56 7 Claims



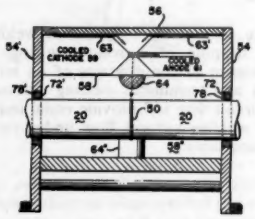
In the fabrication of concrete reinforcing steel mats, comprised of spaced parallel longitudinal bars intersected by spaced parallel crossbars, by means of an array of spot-welding electrodes, with a single crossbar being simultaneously welded by said electrodes to the prealigned longitudinal bars and with the partially welded mat structure being advanced, by distances equal to the crossbar spacing distance, by intermittent feeding means operative upon a crossbar in the position of and upon welding, means are provided to withdraw certain of the longitudinal bars from the welding and feeding process during a predetermined initial stage of the welding cycle of a complete mat structure, to result in a final mat with the number of longitudinal bars across the width of the mat varying for different longitudinal sections of said mat, to adapt the mats to varying load distribution in the final concrete structure and to thereby reduce the metal consumption to a minimum. The object is achieved essentially by initially aligning the leading ends of all the horizontal bars ahead of the welding electrodes, as viewed in the feeding direction, and temporarily withdrawing certain of the longitudinal bars from the welding position by means of a displaceably mounted clamping beam carrying spaced releasable discrete clamping devices for selectively securing any of said bars to said beam.

3,597,569

RADIANT ENERGY GENERATOR AND SHIELD FOR SAME

Howard L. Gerber, Park Forest, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 450,391, Apr. 23, 1965.
Filed Oct. 3, 1969, Ser. No. 863,521
Int. Cl. H05b *1/00*
U.S. Cl. 219—68 13 Claims



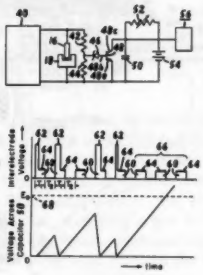
A radiant energy generator, including a plurality of reflectors, each having a parabolic or circularly arcuate cross section, circumferentially spaced from a center point is described. A radiant energy source is positioned within each reflector and a lens is provided for each source. Radiant energy is concentrated in an area equidistant from the center point. A radiant energy shield comprising a pair of solenoid actuated split rings is positioned near the ends of the reflectors. In one position the split rings allow readily the positioning of a tube through the center point, and in another, address the tube to prevent longitudinal leakage of radiation.

3,597,570

DEVICE FOR DETECTING SUSTAINED ARCING ACROSS ELECTROSPARK MACHINING GAPS

Nagao Saito; Kazuhiko Kobayashi, and Susumu Niwa, all of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1969, Ser. No. 826,837
Claims priority, application Japan, May 27, 1968, 35,838
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 P 5 Claims



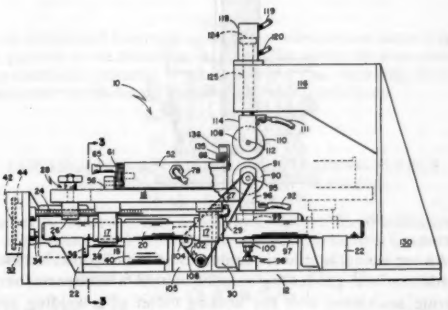
Each time a voltage across the machining gap due to each of applied pulses exceeds a predetermined above-arc magnitude, a timing capacitor is fully discharged by a shorting transistor triggered by a gap-coupled Zener diode. When the voltage is below the predetermined magnitude for a predetermined number of pulses, the capacitor is progressively charged until the voltage across the capacitor exceeds a predetermined magnitude and actuates an instrument for indicating that abnormal discharges are being effected across the gap.

3,597,571

WELDING METHOD AND APPARATUS

Thomas Alan McGill, Hamilton, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Sept. 9, 1968, Ser. No. 758,465
Int. Cl. B23k *11/06*
U.S. Cl. 219—81 7 Claims



Welding sheets of 0.0015 inch thick stainless steel razor blade stock together by overlapping two ends of two sheets

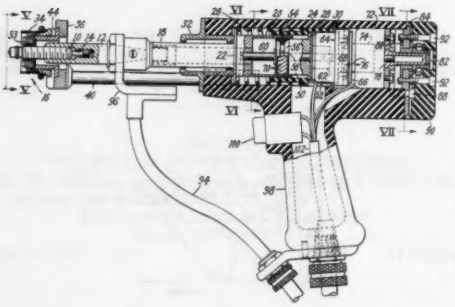
0.0040 inch, inserting the overlapped ends between the peripheral welding surfaces of two adjacent copper-tungsten alloy welding rollers, forming a spot weld under pressure by applying a 1000 ampere, 60 cycle current at 3.8 volts to the rollers for 8 cycles, advancing the overlap longitudinally between the rollers for a distance about one-third the average length of the spot weld, and repeating this process until the entire overlap is welded.

3,597,572

STUD WELDING GUNS

Donald H. Ettinger, Royal Oak, Mich.; Herbert F. Rondeau, Winchester, and Hans F. Schaefer, Jr., Rockport, Mass., assignors to Warren Fastener Corporation, Mount Clemens, Mich.

Filed Jan. 23, 1970, Ser. No. 5,274
Int. Cl. B23k *9/20*
U.S. Cl. 219—98 **13 Claims**



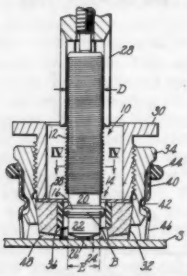
A stud-welding gun that provides a clutch and an actuator which permit a reliable means for welding studs of various lengths. The clutch is of expansible friction type and includes a solenoid-operated means for axially compressing an elastomeric gripping member which locks a stud-gripping collet mechanism and the clutch in a fixed axial relationship.

3,597,573

WELDING STUD AND FERRULE-STUD ASSEMBLIES

Donald H. Ettinger, Royal Oak, assignor to Warren Fastener Corporation, Clemens, Mich.

Filed Jan. 2, 1970, Ser. No. 194
Int. Cl. B23k *9/20*
U.S. Cl. 219—99 **6 Claims**



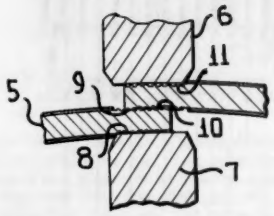
An arc weldable stud is adapted to be initially inserted into predetermined gas-sealing relation within a semipermanent ferrule associated with the holding collet of a welding gun whereupon the weldable end of the stud, retractable axially in the ferrule and having a diameter permitting subsequent relative withdrawal of the gun from the welded stud, may be simultaneously applied by the gun with the ferrule to a work surface. The welding head of the stud has a belt of larger diameter than the remainder of the head but approximately equal to the clearance hole for the stem of the stud.

3,597,574

SURFACE TREATMENT FOR WELDING

Paul M. Erlandson, Palos Park, Ill., assignor to Continental Can Company, Inc, New York, N.Y.

Filed Feb. 5, 1969, Ser. No. 796,799
Int. Cl. B23k *11/02*
U.S. Cl. 219—105 **7 Claims**



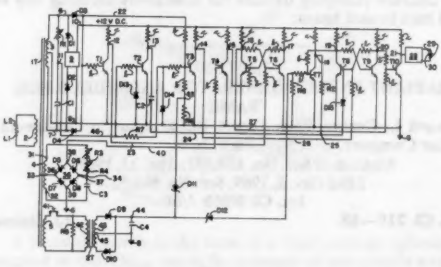
This disclosure relates to electrical resistance welding and more particularly to the surface treatment of metal members along the faying and electrode engageable surfaces thereof. The faying surfaces are embossed or formed by a high energy rate method so as to be of a uniform finish whereby there will be a predetermined resistance between engaged faying surfaces thereby providing for a better control on the power required for forming a weld and the resultant metal weld.

3,597,575

SOLID STATE HEAT CONTROL AND INITIATING CIRCUIT FOR A RESISTANCE WELDER CONTROL

James J. Eckl, Milwaukee, Wis., and James T. Griffin, Scottsdale, Ariz., assignors to Square D Company, Park Ridge, Ill.

Division of Ser. No. 732,676, May 28, 1968.
Filed Apr. 13, 1970, Ser. No. 27,933
Int. Cl. B23k *11/24*
U.S. Cl. 219—108 **7 Claims**



A solid state control for a resistance welder which will prevent false tripping of a solid-state logic memory in response to bounce of the contacts of an initiating switch which initiates and terminates welding current flow and a heat control circuit that will provide equal opposite polarity half cycles of welding current flow under varying ambient temperature conditions.

ERRATUM

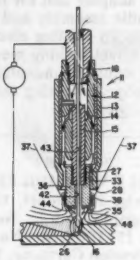
For Class 219—130 see:
Patent No. 3,596,786

3,597,576

SPATTER AND HEAT SHIELD FOR WELDING GUN

Arthur A. Bernard, Beecher, and Richard A. Bernard, Flossmoor, both of, Ill., assignors to Dover Corporation, New York, N.Y.

Filed July 15, 1969, Ser. No. 841,848
Int. Cl. B23k 9/06
U.S. Cl. 214—130 13 Claims



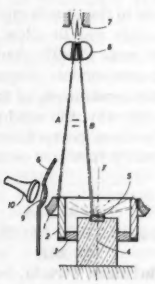
A heat and spatter shield for an arc-welding gun of the type used for applying gas-shielded consumable-electrode arc-welding processes. A shield element insulated from the welding current circuit is attachable to the arc-welding gun so as to be disposed at the downstream end of the current contact tip and extend beyond the downstream opening of the gas nozzle so as to shield the downstream opening of the gas nozzle from metal spatter ejected from the welding operation and from direct heat radiation from the welding arc. At least the core of the shield element is composed of a heat-resistant nonelectrically conductive material. The shield element is disposed in the gas stream and arranged to provide an airfoil effect contributing to formation of the proper flow configuration of the shielding gas. Cylindrical and spherical-type shield elements are disclosed. Various means are disclosed for attaching the shield element to the arc-welding gun.

3,597,577

X-RAY EXAMINATION OF WELDS

Jean Claude Eugene Guittet, Veurey-Voroize, and Jean Claude Richard, Sassenage, both of, France, assignors to Societe dit: Societe Industrielle De Combustible Nucleaire, Annecy, France

Filed Sept. 4, 1968, Ser. No. 757,360
Claims priority, application France, Sept. 7, 1967, 120,341
Int. Cl. B23k 15/00
U.S. Cl. 219—121 EB 6 Claims



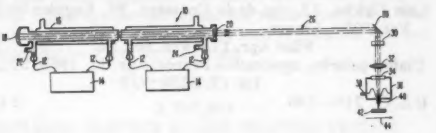
The welding seam between two metal parts which are being or have been electron beam welded in a vacuum enclosure are examined by means of X-rays generated within said enclosure by electron bombardment of an anticathode or target located inside said enclosure. The electron beam used for bombarding the target may be generated by the same gun as that used for the welding, deflection means being provided for deflecting said beam from the welding site to the X-ray target and vice versa. Alternately, at least two separate electron guns may be provided, one being used to generate the electron beam for bombarding the X-ray target, and the other or others for the welding.

3,597,578

THERMAL CUTTING APPARATUS AND METHOD

Arthur Basil Joseph Sullivan, Letchworth, and Peter Thomas Houldcroft, Heathfield, Royston, both of, England, assignors to National Research Development Corporation, London, England

Filed Mar. 13, 1968, Ser. No. 712,782
Claims priority, application Great Britain, Mar. 16, 1967, July 31, 1967, Dec. 5, 1967, 35,021/67;55,346/67;12,447/67
Int. Cl. B23k 27/00
U.S. Cl. 219—121 L 9 Claims



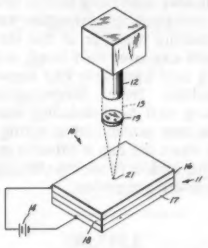
A workpiece is cut or gouged by moving a concentrated laser beam along its surface and directing on to the moving region of the workpiece, at which the laser beam is concentrated, a gas which produces an exothermic reaction at the heated workpiece and sweeps away the products of combustion. In apparatus for supplying a gas to a workpiece the gas is led into a tube and nozzle surrounding the laser beam and is directed at the workpiece through the same nozzle.

3,597,579

METHOD OF TRIMMING CAPACITORS

Robert Miller Lumley, Greensboro, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 25, 1970, Ser. No. 49,588
Int. Cl. B23k 9/00
U.S. Cl. 219—121 L 10 Claims



A method of trimming a capacitor wherein radiant energy is applied to an electrode to adjust the electrode area while an electrical potential is applied across the electrodes of the capacitor to inhibit the formation of electrical shorts.

3,597,580

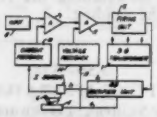
CONTROLLED RECTIFIER ARC WELDING SUPPLY HAVING IMPROVED POSITIVE FIRING CHARACTERISTICS

James B. Stearns, Elm Grove, and Robert W. Wendelburg, Milwaukee, both of, Wis., assignors to Chemetron Corporation, Chicago, Ill.

Filed Apr. 25, 1969, Ser. No. 819,175
Int. Cl. B23k 9/10
U.S. Cl. 219—135 7 Claims

A three phase transformer and a full wave rectifier unit including silicon controlled power rectifiers. A feedback control system includes a pair of separate and cascaded summing

differential amplifiers to control the firing circuits for the related pairs of rectifiers. Each firing circuit includes a unijunction transistor oscillator having a gate circuit including a small trim potentiometer for adjusting the pulse time. A

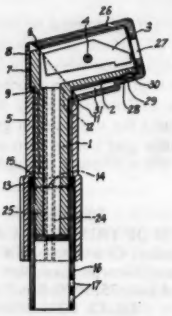


capacitor in series with a resistor is connected in parallel with the oscillator to a bridge rectifier. A silicon controlled rectifier in series with a resistor is connected across the capacitor to form a firing pulse for the related pair of power rectifiers.

3,597,581
ARC-WELDING ELECTRODE HOLDER

Lalo Chiche, 13, rue de la Coussaye, 95, Enghien-les-Bains, Val d'Oise, France

Filed Apr. 17, 1970, Ser. No.
Claims priority, application France, Apr. 25, 1969, 691,3220
Int. Cl. B23k *9/28*
U.S. Cl. 219—140 **5 Claims**

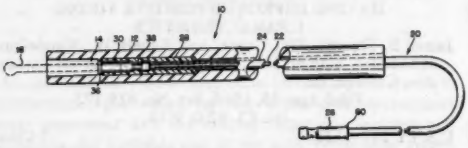


The electrode holder according to this invention comprises a one-piece cap designed for fitting by snap action to the head of the conducting member of the electrode holder by simply slipping said cap over said head, without any risk of untimely releasing said cap. This cap consists preferably of, an element molded from thermosetting polymerized synthetic, insulating and heat-resisting material, which has embedded therein one portion of a spring blade having its free end adapted, when the cap is fitted in position, automatically to engage and lock a retaining shoulder formed on the surface of the conducting member.

3,597,582
ELECTRODE RETAINING CHUCK HANDLE ASSEMBLY WITH ADAPTER UNIT

John P. Goode, Rochester; John J. Saeli, Rochester, and James P. Sformo, Spencerport, all of, N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 8, 1969, Ser. No. 789,686
Int. Cl. A61b *17/36;* **B23k** *9/28;* **A61b** *17/40*
U.S. Cl. 219—144 **3 Claims**



An electrosurgical chuck handle assembly with an adapter unit is disclosed. The chuck handle assembly is designed to provide a means for retaining the electrode used for cutting or coagulating and is held firmly with provisions for changing the electrode. The chuck handle assembly is constructed of materials having sufficient heat distorting properties to allow the handle to distort whenever the assembly is sterilized by heating, thereby rendering the handle ineffective for further reuse. The distortion feature helps eliminate open circuits in the assembly which occur from repeated heat sterilizing.

Also disclosed is an adapter unit for receiving the terminal plug of the chuck handle assembly and electrically connecting the terminal plug to an existing electrosurgical unit. The adapter unit contains novel locking means whereby the terminal plug is retained within the adapter unit in an electrical contact position thereby preventing inadvertent disconnection from the electrosurgical unit.

3,597,583
CONSUMABLE WELDING ELECTRODE

Hans Joachim Hulsewig, Dusseldorf, Germany, assignor to Duria-Werk Karl Kempf G.m.b.H., Neuss Rhine, Germany

Filed Aug. 19, 1969, Ser. No. 851,262
Claims priority, application Germany, Sept. 12, 1968, P 17 58 989.8
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **8 Claims**

A consumable welding electrode for making welded joints which are resistant to rusting, acid attack and heat comprises a core rod which contains alloy-producing components and a sheath which contains both alloy-producing components and flux-producing components. The proportions of the alloy-producing components in the sheath and those in the core rod are such that when the electrode is used, the core rod and the sheath deposit alloys which have substantially the same compositions. To achieve this effect, the proportions of the alloy components in the sheath must be adjusted relatively to those in the core rod to allow for the fact that the sheath is consumed more rapidly than the core rod as it is made of powdered components whereas the core rod is of solid metal. With the constituents of the core rod and of the sheath adjusted in this way, the weld produced by the electrode will have a uniform composition so that no underalloyed corrosion-sensitive spots can occur.

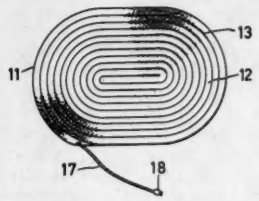
3,597,584
WELDING WIRE FOR THE ELECTRIC ARC WELDING IN AIR

Karel Ter Haar, Christiaan Utrecht, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed July 28, 1969, Ser. No. 845,552
Claims priority, application Netherlands, July 31, 1968, 6810908
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **3 Claims**

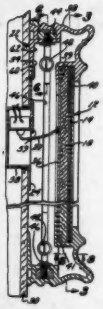
Welding electrode having an iron containing casing and a core containing calcium fluoride, titanium dioxide and potash feldspar.

3,597,585
TUBE MAT
Masaichi Ohno, 336, Hamaderashowacho 3-cho, Sakai, Osaka Prefecture, Japan
Filed Aug. 25, 1969, Ser. No. 852,583
Int. Cl. H05b 1/00
U.S. Cl. 219—201 10 Claims



A mat made of a ropelike member coiled in a flat plane. The rope has incorporated therein a resistance heating wire which is supplied with electricity in order to heat the mat.

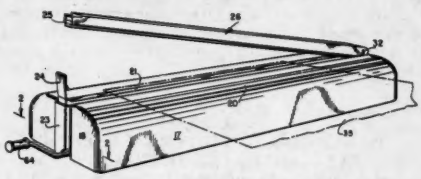
3,597,586
MOUNTING APPARATUS FOR ANTI-CONDENSATION MIRROR
Stephen M. Rebovich, 8754 Rose St., Bellflower, Calif.
Filed Apr. 3, 1969, Ser. No. 812,991
Int. Cl. H05b 1/00
U.S. Cl. 219—219 2 Claims



Mounting apparatus for an anticondensation mirror of the type which includes an electrically energized heating pad mounted against the back of the mirror for heating the mirror sufficiently to prevent water vapor condensation, the mounting apparatus comprising a bracket carried by the mirror and characterized by a downwardly and rearwardly inclined inner surface engageable with a plate adapted for mounting on a wall or the like. The inclined surface of the bracket tends to urge the mirror in tightly seated relation against the wall. Moreover, the plate is integral with a conventional junction box whereby the load carrying capacity of the plate is increased. One embodiment includes a continuous extruded molding which not only defines the bracket, but also provides a perimetrically continuous channel within which the margins of the mirror components are securely held.

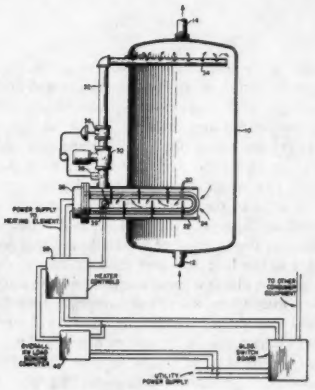
3,597,587
SEALING DEVICE FOR PLASTIC SHEET MATERIAL
Frank M. Baum, 410 N. Milwaukee Ave., Chicago, Ill.
Filed July 30, 1970, Ser. No. 59,477
Int. Cl. H05b 1/00
U.S. Cl. 219—243 6 Claims

A heat sealing device for thermoplastic sheet material is provided with a pivoted pressure bar for pressing two or more layers of thin sheet plastic momentarily against a heated metallic blade. The means for effecting momentary contact includes a crank controlled over center type of spring mounting for a hot steel blade, the mounting normally having stable positions where the steel blade is out of contact



with the plastic material to be heat sealed. The crank is so arranged that crank operation will effect quick movement of said steel blade against the plastic for sealing purposes. The arrangement is such that excessively long application of a hot steel blade for heat sealing is averted.

3,597,588
BUILDING SERVICE WATER HEATING SYSTEM
Robert F. Kirschner, Stoughton, Mass.; John A. Clark, Jr., East Stroudsburg, Pa., and Lemuel J. Morgan, Stroudsburg, Pa., assignors to The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.
Filed May 25, 1970, Ser. No. 39,982
Int. Cl. H05b 3/78
U.S. Cl. 219—314 8 Claims



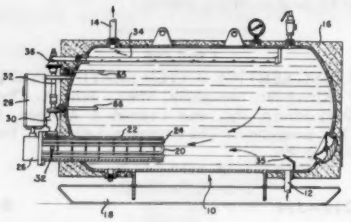
A building service power consumption rate-monitored electric water heating system featuring provision, in functional combination, a water storage tank; a multistep wired electric immersion heater in heat exchange association with a shroud arranged at its inner end in fluid flow communication with the interior of the tank and at its outer end with the intake of a pump, the pump being arranged to discharge through a distributor conduit back into the tank, thereby providing a circulating flow. A heated water takeoff connection is located at the top of the tank, and a cold water inlet connection is located in the lower level of the tank. An electric power supply monitoring mechanism to limit the entire building power consumption rate to a prescribed maximum is provided, to make power available in suitable increments to the water heater only when total power consumption will not exceed the prescribed maximum. Means for regulating rate of flow output of the pump is provided to be automatically responsive to temperature changes in the water as delivered by the pump by means of a water temperature sensor, and the system is so arranged as to adjust the circulating flow rate in accordance with that required to permit the heater to raise

to a prescribed temperature the water being delivered by the pump. Thus, the water moving in heat exchange relation with the heater is drawn from the body of the tank and delivered into the region of the heated water takeoff connection at the prescribed temperature. The pump output flow rate control means may comprise a valve which is operative to regulate the water circulation rate so as to approach a uniform temperature throughout the body of the storage tank. As an alternative to the use of a pump throttling valve arrangement, a variable speed pump may be employed under control of a water temperature sensor located in the conduit leading away from the pump.

3,597,589
POWER COMSUMPTION RATE MONITORED ELECTRIC WATER-HEATING SYSTEM

Lemuel J. Morgan, Stroudsburg, Pa., assignor to The Patterson-Kelly Co., Inc., East Stroudsburg, Pa.

Filed June 26, 1969, Ser. No. 836,903
Int. Cl. F24h *1/20*
U.S. Cl. 219—321 **11 Claims**



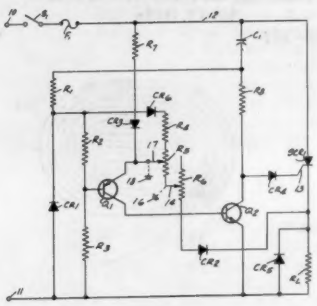
A power consumption rate-monitored electric water-heating system featuring provision, in functional combination; a water storage tank; an electric immersion heater device shrouded and extending into the lower portion of the tank; the heater shroud being open at its inner end and in communication at its outer end with the intake of a pump which is arranged to discharge through a distributor conduit into the uppermost level of the tank; a heated water takeoff connection located at the top of the tank; a cold water inlet connection located at the bottom of the tank; a waterflow-rate-regulating valve in the line between the shroud and the distributor conduit; and an electric power supply monitoring mechanism operative to limit the power consumption rate during normal periods to a prescribed maximum which is much less than the total power which may be consumed by the heating device so as to limit the total power consumption of "offpeak" periods when the power price rate is lowest. The waterflow-regulating valve is arranged to be automatically responsive to temperature changes.

3,597,590
ELECTRIC BLANKET CONTROL

Bobby R. Fleming, Bay Springs, Miss., assignor to Northern Electric Company, Chicago, Ill.

Filed Feb. 12, 1969, Ser. No. 798,722
Int. Cl. H05b *1/02*
U.S. Cl. 219—501 **6 Claims**

An electronic control for an electric blanket or other heated device in which the heating element of the blanket senses the ambient temperature and the other elements of the control are separated from the heating element so that the components of the control are less susceptible to sensing change in ambient temperature near the blanket. The electronic control circuit controls current to the heating element of the blanket by gating an SCR at the zero crossings of the applied voltage so as to prevent radiofrequency interference which would occur if the SCR were switched at other than the zero crossings. Unidirectional current means is connected in a bridge circuit which controls the gating of the SCR so that the temperature coefficients of the components in the

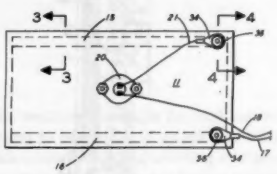


two legs of the bridge circuit are balanced enhancing temperature compensation.

3,597,591
BONDED FLEXIBLE HEATER STRUCTURE WITH AN ELECTRIC SEMICONDUCTIVE LAYER SEALED THEREIN

David L. Van Derlip, San Francisco, Calif., assignor to Delta Control, Inc., San Francisco, Calif.

Filed Sept. 25, 1969, Ser. No. 860,990
Int. Cl. H05b *3/36*
U.S. Cl. 219—528 **1 Claim**



A bonded aluminum-semiconductive heater structure and process for preparing the same wherein a flexible, planar, semiconductive heating element, enclosed within chemically etched insulating layers of a perfluorocarbon copolymer, is bonded to the surface of an aluminum article through a similar copolymer film both surfaces of which have been rendered adherable by exposure to the action of an electrical discharge.

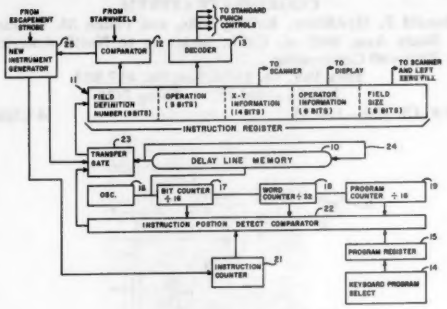
3,597,592
INFORMATION ENTRY SYSTEM

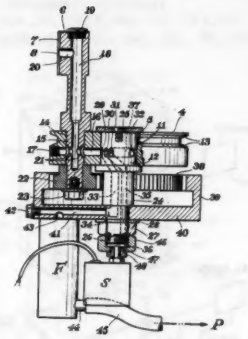
Kenneth E. Graves, San Jose; John C. Vincer, Campbell, and Clarence G. McCune, Balboa, all of, Calif., assignors to California Computer Products, Inc., Anaheim, Calif.

Filed Mar. 22, 1967, Ser. No. 625,112
Int. Cl. G06k *1/02, 1/18*
U.S. Cl. 235—61.1 R **16 Claims**

A system for use in expanding the information entry capabilities of a standard key puncher. The desired programs are punched in standard formats on cards and the standard card reader is used to store these programs in a memory unit. Provision is made for permitting an operator to enter keystroke information at random. This information is stored in the memory until the completion of any preceding automatic

punch operation for permitting the entry of optical scanning information in the memory to be retrieved in accordance with the program instructions and for performing automatic "accumulator"





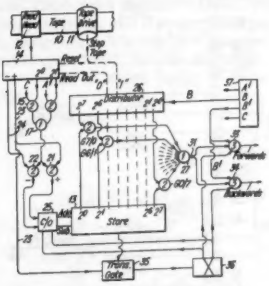
pair of electrical contacts in said circuit whereby the digital counter is advanced.

3,597,593

DATA CONVERSION APPARATUS

Arthur Owen Stanesby; John Young Condie Montgomery, and Donald Ferguson Walker, all of Edinburgh, Scotland, assignors to Terranti, Limited

Filed May 29, 1967, Ser. No. 641,777
Claims priority, application England, June 4, 1966, 24997/66
Int. Cl. G06k *7/06*; **G06q** *7/00*; **H01j** *9/18*; **H04q** *9/02*
U.S. Cl. 235—61.6 **9 Claims**



Apparatus for periodically varying in response to acceleration-representing signals from a computer the number of pulses held in a store to represent the velocity of a machine tool, and after each such variation distributing evenly over a fixed time period tool-control pulses equal in number to the number held in the store.

3,597,594

SHEET COUNTING APPARATUS

Peter Steward Evans, St. Albans, England, assignor to De La Rue Instruments, Limited, London, England

Filed Oct. 2, 1968, Ser. No. 764,491
Claims priority, application Great Britain, Oct. 12, 1967, 46617/67
Int. Cl. G06m *9/02*
U.S. Cl. 235—92 SB **1 Claim**

The invention relates to apparatus for counting a stack of sheets of paper of the kind including a rotary member or grip provided with suction ports for gripping said sheets one at a time and arranged to deflect said sheets one by one on rotation of said member, and means comprising a pressure-sensitive device for counting suction pulses created by the application of suction to said sheets, the pressure-sensitive device comprises a pressure-deformable element adapted on receipt of a pulse to influence directly an electrical circuit which includes a digital counter for the pulses, preferably by closing a

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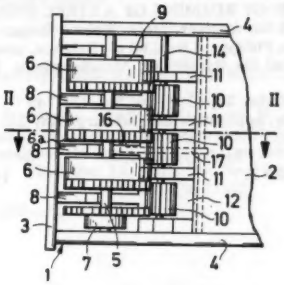
3,597,595

RESETTING AND MOUNTING APPARATUS FOR COUNTING MECHANISMS

Alfred Zielke, Peine, Germany, assignor to ELMEG Elektro-Mechanik GmbH, Peine, Germany

Filed May 5, 1969, Ser. No. 821,809
Claims priority, application Germany, May 6, 1968, P 17 74 222.2
Int. Cl. G06c *27/00, 5/02, 15/42*
U.S. Cl. 235—117 **9 Claims**



Apparatus for mounting, aligning, and resetting digit rollers in a counting mechanism. The digit rollers are held in a casing and are selectively engageable by transfer pinions. Each digit roller has a resetting cam that is selectively engageable by a resetting finger connected to a resetting lever. A spacing rib is connected to the casing and formed between each adjacent pair of digit rollers so that the casing is divided into independent chambers. Each chamber holds a single digit roller so that lateral displacement of one of the digit rollers does not cause lateral displacement of other digit rollers. A curved bottom surface underlies the circumference of each digit roller and provides a means of holding the digit roller during assembly.

3,597,596

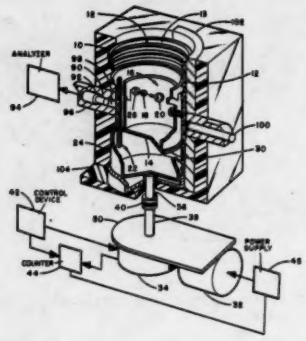
ANALYSIS OF LARGE QUANTITIES OF MATERIALS

James L. Lawless, Denver, and Otis H. Willoughby, Boulder, both of, Colo., assignors to the United States of America as represented by the United States Atomic Energy Commission.

Filed Feb. 7, 1969, Ser. No. 797,509
Int. Cl. G01n *23/10*
U.S. Cl. 250—43.5 MR **4 Claims**

An apparatus and method for measuring radiation from bulk quantities of materials such as waste materials or ash to

determine quantities of radiochemical substances included therein comprising a container for the materials, radiation detection means radially arranged about the container, a



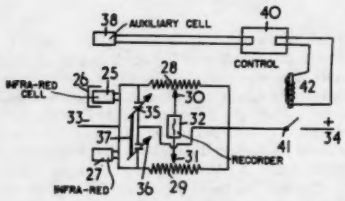
device for producing rotation and translation relative to the container and radiation detection means and means for compensating for material density changes.

3,597,597

METHOD AND APPARATUS FOR MONITORING THE PROGRESS OF RIMMING OF A STEEL INGOT

Robert Alfred Pirlet, Angleur, Liege; Roland Holper, Cointe, and Leon Jean Philippe, Liege, all of, Belgium, assignors to Centre National De Recherches Metallurgigues, Brussels, Belgium

Filed May 24, 1968, Ser. No. 731,749
Claims priority, application Luxembourg, May 29, 1967, 53,768
Int. Cl. G01j *5/00*
U.S. Cl. 250—83.3 H **10 Claims**



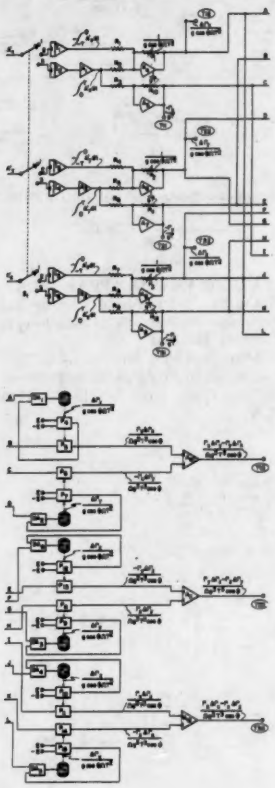
A physical and/or chemical parameter, the development of which is connected with that of the rimming of an ingot, is measured while the major part of he gases issuing from he ingot in the course of the rimming process escape freely, practically without being disturbed, and while the molten steel has free access to the oxygen of the surrounding atmosphere. The curve representing the variation with time of the value measured is plotted, from which it is possible to obtain indications regarding the development of rimming.

3,597,598

METHOD AND MEANS FOR TRANSFORMING THE ACCELERATION SIGNALS GENERATED BY ACCELEROMETERS IN A FIRST COORDINATE SYSTEM INTO ACCELERATION SIGNALS IN A SECOND COORDINATE SYSTEM

Donald F. McAllister, Rolling Hills, and Frank M. Pelteson, Santa Ana, both of, Calif., assignors to North American Rockwell Corporation

Filed Dec. 14, 1964, Ser. No. 417,905
Int. Cl. G06f *15/50;* **G06g** *7/78*
U.S. Cl. 235—150.25 **4 Claims**



A method and means for transforming the acceleration signals generated by orthogonally disposed accelerometers mounted upon an untorqued inertial gyro platform into acceleration signals which are useful in another coordinate system, for example, an earth base latitude and longitude coordinate system.

3,597,599

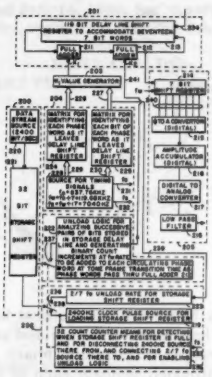
DIGITALIZED TONE GENERATOR

William J. Melvin, Costa Mesa, Calif., assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed June 16, 1969, Ser. No. 833,460
Int. Cl. G06f *3/00*
U.S. Cl. 235—154 **44 Claims**

A digitalized tone generator comprising a circulating loop containing, in series arrangement, a digitalized delay line means such as a shift register of N stages, and first and second full adders. A binary word of N bits circulates around the loop at a rate f_s and is incremented by a value K_1 in said first full adder each circulation thereof to form a repeated sequence of 2^N binary words when $K_1=1$, each sequence

representing a complete cycle of the tone being generated, and each binary word representing a unique phase angle of the cycle. At time intervals T_d, where $(1/T_d)>>f_s$, a variable value K_2 can be added to the circulating word in said second



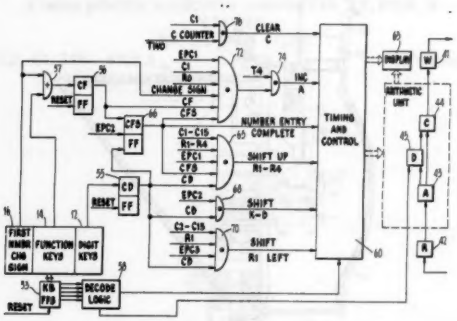
full adder to effectively change the phase thereof by desired increments. A library of such time-synchronous, phase-shifted tones is generated by applying multiplexing techniques to the above structure and making K_1 equal to different values.

3,597,600

ELECTRONIC DESK TOP CALCULATOR HAVING A DUAL FUNCTION KEYBOARD LOGIC MEANS

Carl E. Herendeen, Danville, and Robert A. Ragen, Hayward, both of, Calif., assignors to The Singer Company

Filed May 5, 1969, Ser. No. 821,590
Int. Cl. G06f *7/48*
U.S. Cl. 235—156 **10 Claims**



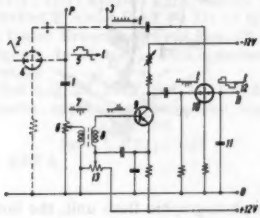
An electronic desk top calculator is disclosed which has a plurality of digit keys for entering numeric data into a storage portion and a plurality of function keys for specifying data handling operations to be performed on entered numeric data. One of the function keys is coupled to a dual function logic circuit which is controlled by a single key. When this single key is actuated after the actuation of one or more digit keys, the circuit acts as an entry circuit and produces a signal which indicates that entry of a number is complete. When this single key is actuated after the actuation of a function key, including itself, the circuit acts as a change sign circuit and produces a signal for incrementing the sign bit of the number in an entry register.

3,597,601

ARRANGEMENT FOR GENERATING THE DERIVATIVE OF STEPPED VOLTAGE FUNCTION

Herbert Bahring, Nieder-Ramstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed Jan. 30, 1969, Ser. No. 795,156
Claims priority, application Germany, Jan. 30, 1968, P 16 38 025.9
Int. Cl. G06g *7/18*
U.S. Cl. 235—183 **7 Claims**



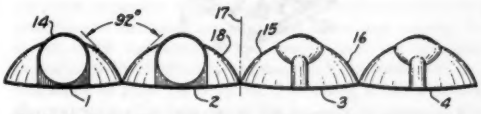
A first sampling circuit samples an input voltage function at arbitrary time intervals. The sampling pulse has a short duration compared to the interval between successive samplings. The sample values are stored until the arrival of the next sample value. A resistor connected in series with a capacitor provides during each sampling a pulse-shaped voltage that is transferred to a second capacitor by means of a second sampling circuit working synchronously with the first. The transfer of charges is such that there appears across the latter capacitor a stepped voltage that is the derivative of the input voltage function.

3,597,602

PHOTOFLASH REFLECTOR SUITABLE FOR FLASHCUBE

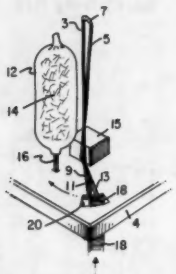
Richard D. Divoky, Mayfield Hts.; Peter H. Malmquist, East Cleveland, and Robert M. Anderson, Pepper Pike, all of, Ohio, assignors to General Electric Company

Filed Dec. 16, 1968, Ser. No. 784,068
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **10 Claims**



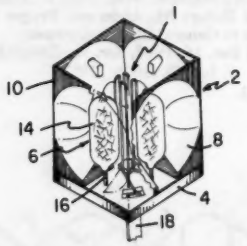
A photoflash lamp-reflector module particularly suitable for use in a four-sided photoflash array such as a flashcube. The reflector is formed in the shape of a parabola having curved winged portions whose tangents form an angle of more than 45° with respect to the optical axis of the reflector. Due to the curvature of the winged portions, a series of reflectors may be arranged in a back-to-back relationship with each other to form a flashcube assembly without any interference or distortion occurring between the winged portions of adjacent reflectors. In a preferred embodiment, the reflector is formed at its innermost region with a transversely extending channel-shaped recessed area for snugly accommodating a minor portion of the circumferential extent of a tubular flashlamp throughout substantially its full length.

3,597,603
PHOTOGRAPHIC FLASHLAMP UNIT
Thomas B. McDonough, Allenwood, Pa., assignor to Sylvania Electric Products Inc.
Filed Dec. 19, 1968, Ser. No. 785,097
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 4 Claims



A multilamp photographic flash unit, the lamps of which are of the percussive primer type, having self-contained elements in the form of a folded torsion spring for firing the lamps. The folded torsion spring is formed in the shape of a hairpin having first and second segments joined by a light. One of the segments has a striker member thereon for firing the lamps. The spring is cocked by crossing the segments over one another and thereafter restraining the striker in the biased condition.

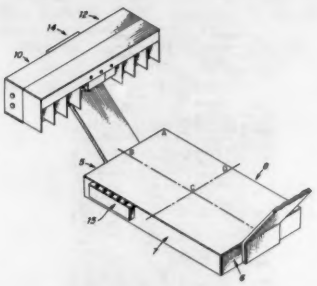
3,597,604
PHOTOGRAPHIC FLASHLAMP UNIT
John W. Shaffer, Williamsport, Pa., assignor to Sylvania Electric Products, Inc.
Filed Dec. 19, 1968, Ser. No. 785,098
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 5 Claims



A multilamp photographic flash unit, the lamps of which are of percussive primer type, having self-contained elements in the form of a folded torsion spring for firing the lamps. The tip of the stationary end of the spring is shaped to function as a catch to hold the striker formed on the movable end thereof while the spring is in a cocked position.

3,597,605
SYSTEM FOR ILLUMINATING A LARGE MICROFILM COPY BOARD
John R. Kane, Piffard, and Daniel Harvey Robbins, Rochester, both of, N.Y., assignors to Itek Corporation, Lexington, Mass.
Filed June 2, 1969, Ser. No. 829,410
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 P 18 Claims

A copy board illumination system to control the light distribution at various portions of the copy board. A lighting fixture is provided in an elevated position above each of the two ends of the copy board. Each fixture is divided into three zones along the length of the fixture. The two end zones each have a plurality of vertical baffles which control the distribution of illumination between each edge of the copy board and the center of the copy board. The center zone illuminates the

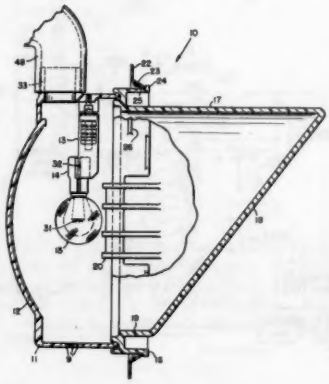


center of the copy board and has vertical baffling which is slidable along the length of the fixture and controls the illumination on the center of the copy board. A horizontally slidable baffle is provided beneath each of the three zones and controls the distribution of illumination between the end and center of the copy board.

ERRATUM

For Class 240—7 see:
Patent No. 3,596,837

3,597,606
WARNING-LIGHT HOUSING
Karl W. Abendroth, Rochester, N.Y., assignor to General Signal Corporation
Filed Dec. 3, 1969, Ser. No. 788,825
Int. Cl. F21v *13/04*
U.S. Cl. 240—41.3 10 Claims



A warning-light housing of unitized construction having an integral reflector and lens. A receptacle is mounted to the housing and the receptacle, lens, and reflector are each in a fixed predetermined position relative to the other. The reflector surface has distributed random irregularities for uniform dispersion of light.

ERRATA

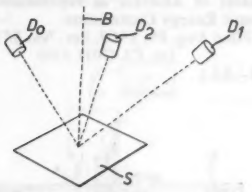
For Classes 250—43 and 250—83 see:
Patent Nos. 3,597,596 and 3,597,597

3,597,607

ELECTRON PROBE EMPLOYING THREE SECONDARY EMISSION DETECTORS WHOSE OUTPUTS ARE COMBINED TO MINIMIZE ERROR

Alistair John Campbell, and Andrew D. G. Stewart, both of Cambridge, England, assignors to Cambridge Instrument Company, London, England

Filed Feb. 16, 1968, Ser. No. 706,001
Claims priority, application Great Britain, Feb. 16, 1967, 7463/67
Int. Cl. G01t 1/16
U.S. Cl. 250—49.5 PE 11 Claims



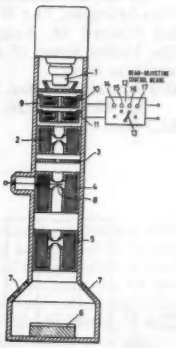
In electron beam apparatus in which an electron beam is caused to impinge on a specimen surface and the backscattered electrons are detected and used to produce an image-giving information about the surface, instead of using a single detector, which cannot distinguish between changes in signal due to material and changes due to topography, and instead of using two detectors which can eliminate changes due to material but only show topographical features in certain directions, it is proposed to use at least three detectors, symmetrically arranged, and to combine their signals in such a way as to allow observation of topography without regard to angular position or with regard to a direction of apparent illumination that is variable at will.

3,597,608

METHOD AND APPARATUS FOR ADJUSTING ELECTRON BEAM IN ELECTRON MICROSCOPE

Ernst Gutter, Oberkochen, Germany, assignor to Carl Zeiss-Stiftung d.b.a. Carl Zeiss, Heidenheim on the Brenz, Wuerttemberg, Germany

Filed Feb. 14, 1969, Ser. No. 799,349
Claims priority, application Austria, Feb. 23, 1968, A 1737/68
Int. Cl. H01j 37/26
U.S. Cl. 250—49.5 A 14 Claims



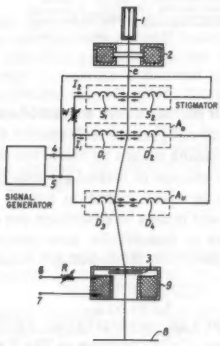
In an electron beam microscope wherein the beam is laterally adjusted to a desired position, in which it visibly impinges on an image screen, by adjusting the intensity and polarity of the unidirectional magnetic field of each of several electromagnetic deflecting units arranged at different sides of the beam, adjustment of the beam is facilitated by temporarily generating alternating magnetic fields in all but one of said units for laterally wobbling the beam while adjusting the unidirectional magnetic field of the latter unit so that the wobbling beam periodically momentarily assumes its aforesaid adjusted position. Thereafter, alternating magnetic fields are generated in all but one of the remaining unadjusted units which are successively adjusted by means of their unidirectional magnetic fields in the above manner until all but one of the units is adjusted. The unidirectional magnetic field of the latter unit is then adjusted to complete the adjustment of the position of the beam.

3,597,609

METHOD OF IMAGE FOCUSING IN PARTICLE-BEAM APPARATUS COMPRISING CHANGING THE BEAM INCIDENCE ANGLE AT 10 TO 15 HERTZ

Klaus Anger; Dieter Braun, and Fred Fox, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Berlin, Germany

Filed Aug. 28, 1969, Ser. No. 853,654
Claims priority, application Switzerland, Sept. 2, 1968, 13147/68
Int. Cl. H01j 37/26
U.S. Cl. 250—49.5 A 2 Claims



A method of focusing the image of a beam-transmissive specimen formed by the electrooptical lens system in a particle-beam apparatus equipped with beam deflectors including imaging the specimen on an image plane and varying the direction of incidence of the beam upon the specimen periodically by electrically exciting the beam deflectors at a frequency of from 10 to 15 Hz. The image is observed and the excitation of at least one of the lenses comprising the lens system is adjusted to focus the image while the direction of the beam is varied.

3,597,610

INTENSIFICATION SCREEN FOR RADIOGRAPHIC FILM

Raymond Marius Augustin Bayol, Vincennes, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 25, 1968, Ser. No. 724,256
Claims priority, application France, Feb. 22, 1968, 140896
Int. Cl. G01n 21/34
U.S. Cl. 250—65 10 Claims

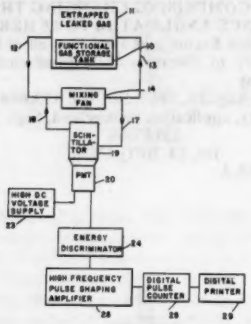
A layer comprising particles of a low melting point metal alloy of lead, bismuth, tin and cadmium and a binder is provided as an intensification screen. Good intensification without fog is obtained using particles of alloys, such as Wood metal, which melt lower than 80° C.

3,597,611

METHOD AND APPARATUS FOR DETECTING GAS LEAKS USING RADIOACTIVE TECHNIQUES

Randall W. Harman, San Clemente; Roger J. Rusch, Dana Point, and James F. Wakeman, Manhattan Beach, all of, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed June 20, 1967, Ser. No. 647,488
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 8 Claims



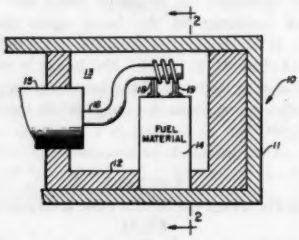
A gas leak detector for use where a trace of radioactive gas is mixed with a functional gas, the leak rate of which is to be determined, and including means to cause the flow of a portion of an entrapped volume of leaked gas into the vicinity of a radiation detector in which radiation energy is converted into voltage pulses, and means to determine the count rate of change of the pulses in consecutive time periods and from which the leakage rate of the functional gas is determined.

3,597,612

POWER-PULSE MONITORING PROBE

Leo R. Boyd, San Jose, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 27, 1969, Ser. No. 793,944
Int. Cl. G01t 3/04
U.S. Cl. 250—83.1 8 Claims



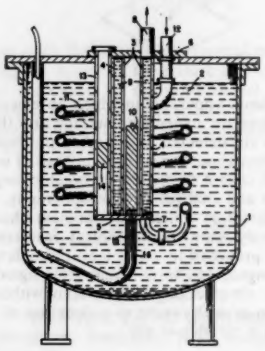
An apparatus for monitoring total energy variations in a nuclear reactor and comprises, in one embodiment, a heat sink, a mass of fissionable material in thermal contact with said heat sink and a thermocouple in electrical and thermal contact with said mass of fissionable material. In order to compensate for gamma radiation a further improvement is provided in another embodiment by adding a mass of material having the same gamma absorption characteristics as said mass of fissional material, said gamma absorbing material being electrically insulated from said heat sink, and a second thermocouple in electrical and thermal contact with said gamma absorbing material and in electrical series opposing connection with said first thermocouple. The disclosed device is used to measure the transient power variations and evaluate the Doppler effect for controlling reactor stability, or to measure transient power variation in fast or thermal reactors to obtain data for monitoring the reactor operation.

3,597,613

METHOD OF MEASURING BORON CONCENTRATION IN WATER BY NEUTRON ABSORPTION

Venkatesan Rajagopal, Monroeville, Pa., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 19, 1969, Ser. No. 851,174
Int. Cl. G01t 3/00
U.S. Cl. 250—83.1 4 Claims



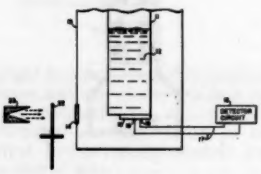
A method and apparatus for determining boron concentration in water. The principle of neutron absorption is used with an electronic arrangement for determining the time required to count a predetermined number of nonabsorbed neutrons. The time to reach the same number of counts with no boron present is subtracted. The remaining time is found to vary directly and linearly with boron concentration.

3,597,614

CADMIUM PHOSPHIDE PHOTOCONDUCTIVE INFRARED DETECTOR

Stephen G. Bishop, Arlington, Va.; William J. Moore, Greenbelt, Md., and Edward M. Swiggard, Alexandria, Va., assignors to the United States of America as represented by the Secretary of the Navy

Filed June 25, 1970, Ser. No. 49,702
Int. Cl. G01j 5/20, 5/28
U.S. Cl. 250—83.3 H 3 Claims



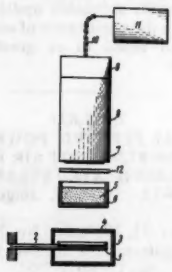
A cadmium phosphide photoconductive detector is provided having a 2.1 micron peak in photoconductive sensitivity and a 0.6 *e*V energy gap at 77° K. It may be compensated with various known impurities to lower the free carrier concentration.

3,597,615

DETERMINING THE CONTENT OF CHEMICAL ELEMENTS OR ISOTOPES THEREOF IN A SPECIMEN BY UTILIZING THE EFFECT OF RECOILLESS RESONANCE ABSORPTION OR SCATTERING OF GAMMA RAYS

Anatoly Vasilievich Dolenko, 4 ul. Oktiabrskogopolya 1, kv. 5; Boris Grigorievich Egiazarov, ul Kuusinena, 7, kv. 179; Lev Mikhailovish Isakov, Novaya Bodraya ul, 5, kv. 71; Vitaly Iosifovich Goldansky, Vorobiovskoe shoose, 2-b, kv. 49; Evgeny Fredovich Makarov, Trubnikovsky per, 11, kv. 3, and Veniamin Alexandrovich Trukhtanov, Kremenchugskaya ul, 8, kv. 12, all of Moscow, U.S.S.R.

Filed Feb. 28, 1967, Ser. No. 619,290
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 6 Claims



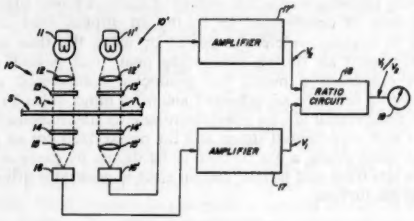
An arrangement and process for determining the content of chemical elements, isotopes or compounds thereof in a specimen comprising the measurement during irradiation of the specimen with gamma-rays of a quantity that is proportional to the content of the element, isotope or compound in the specimen.

3,597,616

INFRARED MEASUREMENT TECHNIQUE

Donald C. Brunton, and Carl R. Soltesz, both of Columbus, Ohio, assignors to Brun Sensor Systems, Inc., Columbus, Ohio

Filed May 7, 1969, Ser. No. 822,597
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 D 8 Claims



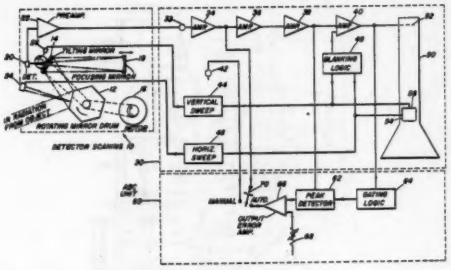
Measurement of moisture content or other property of a product or substance is accomplished through determination of the relative degree of transmission of two beams of radiation directed through a test quantity of the substance. The two beams of radiation are of wavelengths in the infrared spectrum with the specific wavelengths not selected on the basis of exhibiting characteristic absorption by the particular substance property to be determined but which wavelengths are selected on the basis that they exhibit a wavelength and property dependent scattering characteristic for this substance. Determination of the relative scattering of transmission of the two beams of radiation, one of which is of wavelength to exhibit less scattering at relatively lower percent inclusion of the particular property in a given mass of the substance, results in a ratio which is indicative of the included percentage of the property under test.

3,597,617

INFRARED THERMOGRAPH HAVING AN AUTOMATIC BRIGHTNESS CONTROL

Robert E. Passaro, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed July 30, 1969, Ser. No. 846,109
Int. Cl. G01n 21/34
U.S. Cl. 250—833 HP 7 Claims



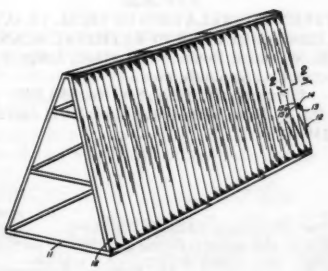
An infrared detector is scanned over a field of view generating an infrared video signal based on the intensity of the infrared radiation appearing in the field of view, which signal is utilized to provide a thermal image of the field of view. After sufficient amplification, the infrared video signal is fed to a peak detector which derives a signal based on the maximum or minimum signal level in the infrared video signal which is coupled to an error amplifier and reinserted in the processing channel for controlling the brightness of the scene to be displayed.

3,597,618

GROUND BASE TARGET FOR TESTING ELECTROOPTICAL SENSORS IN THE INFRARED AND VISIBLE RANGE

Robert J. Jordan; Ronald N. Phillips, and Robert R. Shatzer, all of Lexington Park, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 15, 1969, Ser. No. 850,499
Int. Cl. G21h 3/00
U.S. Cl. 250—84 10 Claims



An array of bars of aluminum sheet material of triangular cross section to be used as a target for testing infrared or television equipment. The three sides of each bar are painted white, black and alternating black and white stripes with one side heated so as to provide an IR source. In addition, each bar is rotatable about its longitudinal axis so that the target provides for a broad range of light and temperature contrasts.

3,597,619

AUTOMATIC DRAFTING-DIGITIZING APPARATUS

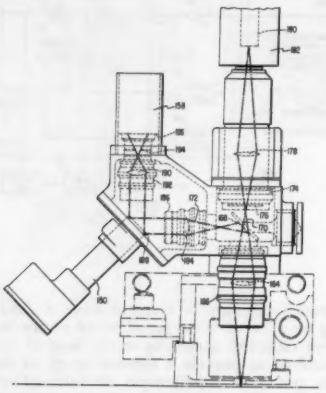
Charles H. Little, Cleveland; Waldo H. Kliever, Cleveland Heights, and Eugene L. Wiemels, Cleveland Heights, all of, Ohio, assignors to Universal Drafting Machine Corporation, Bedford Heights, Ohio

Division of Ser. No. 516,059, Dec. 23, 1965, abandoned, which is a continuation-in-part of Ser. No. 262,590, Mar. 4, 1963, abandoned.

Filed Dec. 4, 1968, Ser. No. 198,530

Int. Cl. G05b *1/00*

U.S. Cl. 250—202 11 Claims



There is disclosed hereinafter a drafting-digitizing machine for automatically scribing information on sheetlike articles and for digitizing lines, curves, and the like that are scribed on or in sheetlike articles. The machine includes a support assembly for supporting the sheetlike articles and for supporting a scribing-scanning head. The head is provided with scribing tools and a photoelectric scanning assembly. In addition, the head is moved automatically by motive powered assemblies under the control of a computer having a plurality of digital input assemblies associated with it for providing a plurality of output signals. Output devices disclosed for producing records concerning the operation of said scribing-scanning head, and an additional output member is provided whereon a TV picture of a line, curve, or the like on a sheetlike article may be observed by the machine operator.

3,597,620

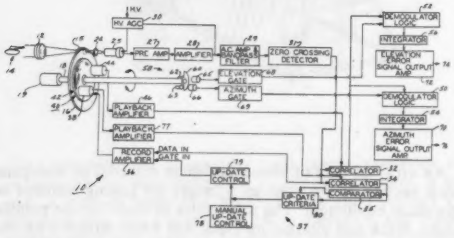
PATTERN CORRELATION OPTICAL TRACKER UTILIZING CIRCULAR NUTATIONAL SCANNING

William H. Wellman, Boxborough, Mass., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 29, 1969, Ser. No. 854,205

Int. Cl. G01j *1/20*; G01d *5/36*; H01j *39/12*

U.S. Cl. 250—203 26 Claims



A pattern correlation optical tracker having a rotatable reticle with apertures arranged in a predetermined pattern eccentric with respect to the axis of the rotation of the reticle to effect a circular nutational scanning of a target scene. Circuit means including a photo detector for receiving the light passing through the reticle and converting it to an electric signal or waveform. A waveform corresponding to a selected reference scene is stored in a memory magnetic disc rotating synchronously with the reticle, and the signature waveform of a current scene is continuously correlated with a time-shifted memory reference waveform taken from the memory disc at a location 180° displaced from the recording location thereof to produce a desired correlation-with-nutation signal having modulations and from which orthogonal error signals are derived. Synchronous demodulation of this signal produces the orthogonal elevation and azimuth error signals which can be used to maintain the tracker on the target scene, or to indicate the magnitude and direction of scene displacement. Current and reference scene signal patterns are compared to provide automatic updating of the memory reference scene upon the occurrence of scene changes resulting in decorrelation equal to or greater than a preset threshold magnitude.

3,597,621

SPECIAL THERMAL ELECTRIC POWER GENERATING UNIT USING PRESSURIZED HOT AIR TOGETHER WITH SUPERHEATED STEAM

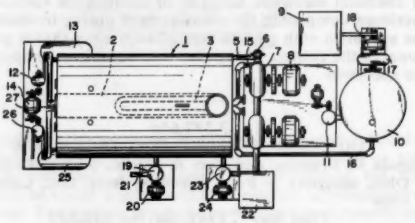
Kiichi Yamada, 15-12, 1-Chome, Jingumae, Shiburja-ku, Tokyo, Japan

Filed Oct. 31, 1968, Ser. No. 772,239

Claims priority, application Japan, Dec. 1, 1967, 42 76761

Int. Cl. F02c *7/00*

U.S. Cl. 290—2 3 Claims



A thermal electric power generating unit using pressurized hot air together with superheated steam, which is useful for storing superfluous electric energy of thermal power plants in the form of compressed air during an offpeak load period and to regenerate electric power by using the thus stored compressed air during succeeding peak load periods. The unit comprises a means for producing compressed air, a boiler to produce superheated steam, a blind drum to heat the compressed air, an injection nozzle to simultaneously inject said superheated steam and the pressurized hot air from said blind drum, a gas turbine to be driven by gaseous mixture jets from said nozzle, and an electric generator driven by said gas turbine.

3,597,622

ELECTRICAL SWITCHES FOR USE IN STARTER MOTORS FOR I.C. ENGINES

Ronald Wilson, 13 Chelmsley Lane, Marston Green, Birmingham, England

Filed Apr. 14, 1970, Ser. No. 28,317

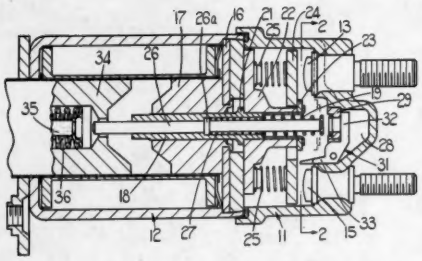
Claims priority, application Great Britain, May 27, 1969, 26636

Int. Cl. F02n *11/00*

U.S. Cl. 290—38 3 Claims

An electrical switch is for use in an internal combustion engine starting mechanism of the kind including a starter motor, a pinion driven by the starter motor and engageable with a toothed wheel on the engine, and a solenoid for moving the pinion into engagement with the toothed wheel, the solenoid including an armature having an inner part for moving the pinion and an outer part coupled to the inner part. A switch

of this kind includes a housing and first, second and third fixed contacts secured in the housing in spaced relationship and lying in a common plane. A movable carrier is mounted for movement in a direction at right angles to the plane of the fixed contacts and a conductive bridging piece is resiliently mounted on the carrier and is urged to lie in a plane parallel with the plane of the fixed contacts. A sleeve slidably mounted in the housing is engaged at one end with the carrier and projects at its other end from the housing for engagement with the outer part of the armature. A push rod is slidable within the sleeve and projects at one end from the sleeve for engagement by the inner part of the armature, resilient means urging the sleeve and the push rod outwardly. A movable latch member is movable by the push rod and is resiliently urged to a position wherein it projects above the plane of the fixed contacts to prevent the bridging piece engaging the third fixed contact during movement of the carrier



towards the fixed contacts. The arrangement is such that in use upon energization of the solenoid the outer part of the armature moves the carrier through the sleeve towards the fixed contacts, the bridging piece engaging the latch member and thus being tilted relative to the carrier during further movement of the carrier. The bridging piece in its tilted condition engages the first and second fixed contacts to complete a first circuit of the starter motor and the latch member is then moved by the push rod when the pinion of the starter motor is fully engaged with the toothed wheel of the engine to permit the bridging piece to return to its original position with respect to the carrier so as to engage the third fixed contact to complete a second circuit of the starter motor. The second circuit when completed causes energization of the starter motor at a full torque value while completion of the first circuit causes energization of the starter motor at a reduced torque value.

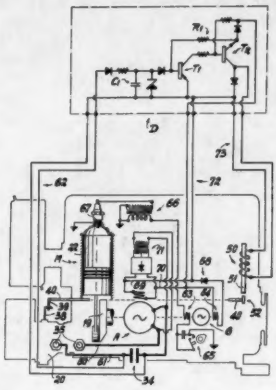
3,597,623

POWER PLANT AND GENERATING UNIT

Carlo Gilardi, 24, via Carlo Boni, Milan, Italy, assignor to Masa S.R.L., Milan, Italy

Filed Jan. 24, 1969, Ser. No. 793,649
Claims priority, application Italy, Jan. 27, 1968, 12075A/68
Int. Cl. H02p *9/04*
U.S. Cl. 290—40 **5 Claims**

An electric generating set adapted for supplying current to an intermittently current consuming device such as an arc welder device. The set comprises an internal combustion motor, a speed governor to govern said motor at a given service speed, a generator driven by the motor and having a power output, and output sensing and actuator devices influencing



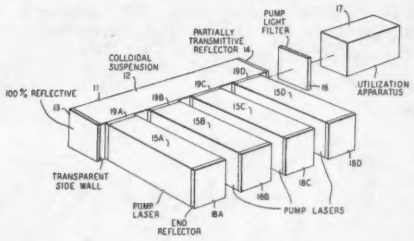
said speed governor and set the motor at a lower idle speed when no current is withdrawn from the generator.

3,597,624

OPTICAL RAMAN OSCILLATOR EMPLOYING COLLOIDAL SUSPENSION OR EMULSION

Daniel Weiner, Hazlet, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 30, 1969, Ser. No. 795,311
Int. Cl. H03f *7/20*
U.S. Cl. 307—88.3 **4 Claims**



A coherent optical Raman oscillator is disclosed in which the tendency to filament formation is reduced without proportionally impairing stimulated Raman scattering strength by employing a colloidal suspension or emulsion of Raman-active particles in an inactive medium or of colloidal-size inactive particles in a Raman-active medium. Other bodies of size smaller than a wavelength of Raman-scattered light may also be used.

3,597,625

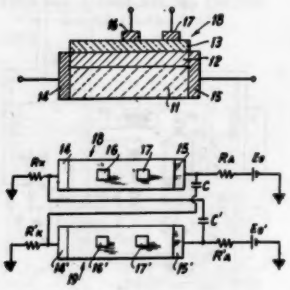
NEURISTOR ELEMENT EMPLOYING BULK EFFECT SEMICONDUCTOR DEVICES

Hisayoshi Yanai; Toshiaki Ikoma; Takayuki Sugeta; Yasuo Matsukura, and Kuniichi Ohta, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 29, 1968, Ser. No. 771,492
Claims priority, application Japan, Oct. 31, 1967, 42/70120
Int. Cl. H03k *19/08*
U.S. Cl. 307—201 **2 Claims**

A neuristor element is described which is formed of a pair of Gunn effect elements using bulk negative resistance effect materials capable of forming high electric field layers in the elements upon the application of electric field intensities of

preselected values within the materials. The elements are so coupled to one another that the initiation of a high electric field layer in one of them acts to inhibit the formation of such layer in the other element by effectively lowering the



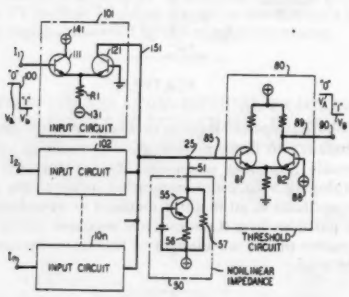
electric field intensity in the other element well below the threshold level necessary to form such high electric field layers. Several embodiments are described with one using capacitive coupling and another resistive or direct coupling.

3,597,626

THRESHOLD LOGIC GATE

John D. Heightley, Basking Ridge, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 1, 1969, Ser. No. 811,730
Int. Cl. H03k *19/22*
U.S. Cl. 307—203 **2 Claims**



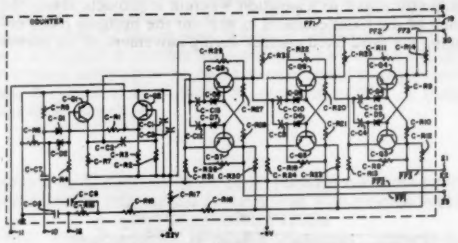
The dichotomy presented in threshold logic gates by the desirability of a large gap or unit step near the threshold point, coupled with the desirability of a small overall signal swing on the threshold element for a large fan-in, is minimized by replacing the usual linear summing resistor with a nonlinear variable impedance element, such as a field effect transistor in one illustrative embodiment, having a low impedance below the gate threshold and a high impedance in the gap.

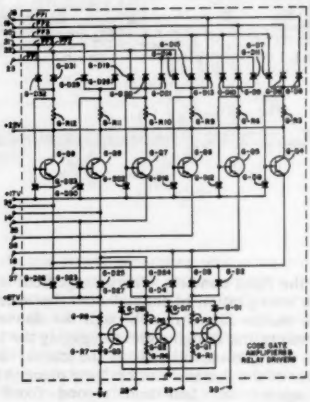
3,597,627

BINARY COUNTER AND LOGIC GATES FOR PROVIDING TRAFFIC FLOW CONDITION FOR TWO SUCCESSIVE BINARY COUNTS

Philip Cane, Brooklyn, N.Y., assignor to The Marbelite Company, Inc., Brooklyn, N.Y.

Continuation of application Ser. No. 532,520, Feb. 21, 1966. This application Apr. 29, 1970, Ser. No. 31,823
Int. Cl. H03k *21/00, 23/08*
U.S. Cl. 307—220 **3 Claims**





A three-stage binary counter establishes six different traffic flow conditions without feedback connections by using logical circuitry to maintain two of the traffic conditions for two successive binary counts.

3,597,628

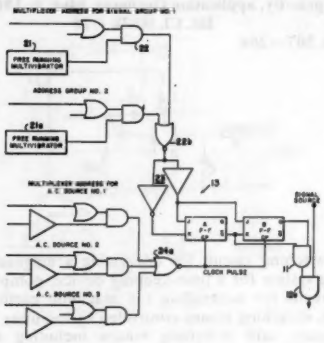
PULSE ISOLATION AND MEASURING

Richard L. Gowan, Coronado, and Lewis E. Adsit, San Diego, both of, Calif.

Division of Ser. No. 648,547, June 22, 1967. Filed Oct. 21, 1969, Ser. No. 870,824
Int. Cl. H03k *5/18*
U.S. Cl. 307—231 **1 Claim**

As prime equipment, such as radio, radar, sonar, computer and control equipment becomes more complex, the probability of failure increases. This disclosure is directed to a system for rapidly monitoring the quality of the signal at numerous test points throughout the equipment. In the interest of reliability, each signal parameter at each test point is con-

verted to a pulse the duration of which is a measure of the parameter. These pulses are each transmitted to a centrally



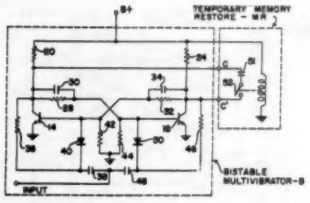
located general purpose computer where each is measured by a high frequency oscillator, gate, and counter.

3,597,629

TEMPORARY MEMORY RESTORE CIRCUIT FOR MULTIVIBRATOR

Peter G. Bartlett, Davenport, Iowa, assignor to Gulf & Western Industries, New York, N.Y.

Filed Aug. 20, 1968, Ser. No. 812,940
Int. Cl. G11c *11/34*; **H03k** *3/26*
U.S. Cl. 307—238 **12 Claims**



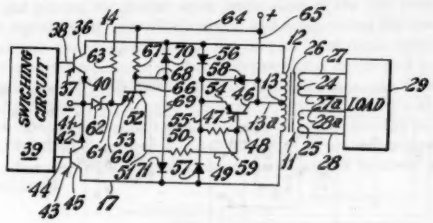
There is provided a temporary memory restore circuit for actuating a bistable multivibrator to its last stable state prior to removal of power, when power is returned to the circuit. The memory restore circuit includes a storage capacitor, which is connected across the output of the bistable multivibrator. The capacitor monitors the operation of the multivibrator and is charged in accordance with the last stable state of the multivibrator. Connected in series with the storage capacitor is a normally open circuit means for connecting the capacitor across the output circuit of the bistable multivibrator when power is applied to the circuit, and for disconnecting the capacitor from the circuit when power is removed.

3,597,630

TRANSIENT VOLTAGE SUPPRESSOR

Albert W. Compoly, Marlboro, and Peter A. Vincent, Little Silver, both of, N.J., assignors to The Bendix Corporation

Filed Apr. 1, 1969, Ser. No. 811,927
Int. Cl. H03k *17/08, 17/64*
U.S. Cl. 307—246 **11 Claims**



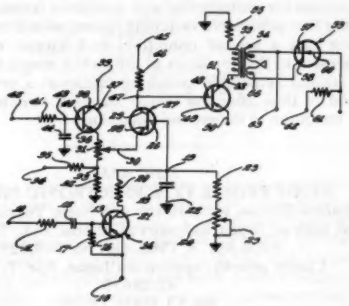
A circuit for eliminating the effects of undesirable transient voltages generated by the removal of a primary source voltage from, or interruption of current flow through the windings of an inductive element.

3,597,631

FIRING-ANGLE CONTROL CIRCUIT

George H. Fathauer, Decatur, Ill., assignor to The Dale Valve Company, Morton Grove, Ill.

Filed Sept. 20, 1968, Ser. No. 761,088
Int. Cl. H03k *17/00, 5/20*
U.S. Cl. 307—252 N **9 Claims**



A firing-angle control circuit having means for generating a ramp control voltage and for utilizing an electronic switching means to compare the ramp voltage with the instantaneous value of an error signal. Whenever an error signal bears a predetermined relationship to the instantaneous amplitude of the ramp signal, the switching means is deenergized and the signal source is coupled to the load. The ramp control voltage is phase related to the signal source, and hence the comparison between the ramp voltage and the source signal provides a means for controlling the firing angle of a switching means which regulates the application of the source to the load.

3,597,632

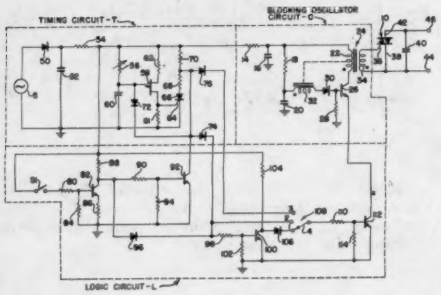
SOLID-STATE TIME-DELAY SWITCHING CIRCUIT

James J. Vandemore, Geneseo, Ill., and Donald E. Henry, Davenport, Iowa, assignors to Gulf & Western Industries, New York, N.Y.

Filed Sept. 27, 1968, Ser. No. 812,487
Int. Cl. H03k *17/26*
This application filed under Rule 47
U.S. Cl. 307—252 **7 Claims**

There is provided a time-delay switching circuit for switching an alternating-voltage supply source across a load comprising an electronic control means, such as a triac, hav-

ing a first, second, and control electrode, and exhibiting the characteristic of presenting a low impedance to current flow from the voltage source to the load when a forward biasing signal is applied to the control electrode; and, circuit means for applying a forward biasing signal to the control electrode of the electronic control means. The circuit means includes a transformer having a primary and a secondary winding wherein the secondary winding is connected between the first and control electrode of the electronic control means; first



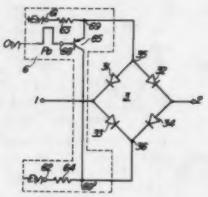
and second actuatable switching means for, when both are actuated, completing a circuit between the primary winding and a power supply source for energizing the primary winding; means for periodically, and at a given frequency, actuating the first actuatable switching means; switch means having a first and a second condition; and, circuit means being responsive to the condition of the switch means for actuating the second actuatable switching means at a predetermined period of time after the switch means is switched from the first condition to the second condition.

3,597,633

DIODE BRIDGE TYPE ELECTRONIC SWITCH

Chikafusa Hirano, Kodaira-shi, and Norio Yokozawa, Fuchu-shi, both of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 5, 1968, Ser. No. 719,025
Claims priority, application Japan, Apr. 7, 1967, 42/28639
Int. Cl. H03k *17/74*
U.S. Cl. 307—257 **10 Claims**



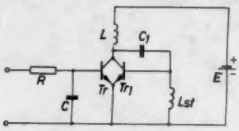
A diode bridge type electronic switch in which an electronic switch controlled by a control signal is provided between a first and a second control terminal of said diode bridge type electronic switch and fixed biases with different polarities are provided between a connection point of said electronic switch and said first control terminal and a connection point of said electronic switch and said second control terminal.

3,597,634

TWO OR MORE TRANSISTOR DEVICE TO ENERGIZE A DRIVING COIL

Hans Flaig, Schramberg-Sulgen, Wurttemberg, Germany, assignor to Gerbruder Junghans Gessellschaft Mit Beschrankter Haftung, Schramberg, Wurttemberg, Germany

Filed Mar. 7, 1968, Ser. No. 711,267
Claims priority, application Germany, Mar. 9, 1967, J 33 175
Int. Cl. H03k *1/18*
U.S. Cl. 307—266 **2 Claims**



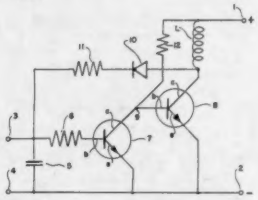
A switching circuit for energizing a magnetic oscillating driving system for a time-keeping device, comprising driving coil means for controlling the magnetic oscillating driving system, switching means controlled by impulses of a constant frequency, said switching means including at least one transistor responsive to the impulses of constant frequency, said switching means energizing said driving coil means, a delay network connected to the input of the switching means for delaying the response of said switching means to the impulses of constant frequency whereby the switching means provides output pulses of narrower widths than the width of the impulses of constant frequency, said switching means consisting of an additional transistor connected in parallel across the output of the transistor responsive to the impulses of constant frequency, and control coil means responsive to the magnetic system for controlling the additional transistor in accordance with the movement of the magnetic system.

3,597,635

TRIGGER CIRCUIT

Michael Reich, Stuttgart-Wangen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 5, 1969, Ser. No. 804,411
Claims priority, application Germany, Apr. 27, 1968, P 17 63 283.6
Int. Cl. H03k *3/284*
U.S. Cl. 307—282 **1 Claim**



A trigger circuit includes a two stage amplifier having a positive feedback path through a diode, so that the circuit is positively switched. The circuit has particular applicability to control of inductive loads.

3,597,636

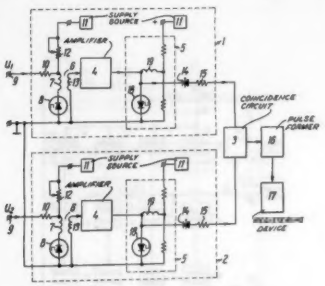
INDICATOR OF ZERO PHASE ANGLE BETWEEN TWO VOLTAGES

Svyatoslav Anatolievich Kravchenko, Kirovsky prospekt 65, kv. 29, Leningrad, U.S.S.R.

Filed June 21, 1968, Ser. No. 738,869
Int. Cl. H03k *5/20*
U.S. Cl. 307—232 **5 Claims**

A phase angle difference sensing circuit for sensing a zero phase angle between two voltage signals comprises two channels, each of the two channels having a respective input and output, each of the voltage signals being applied to a respec-

tive input of the two channels, two pulse transformers, each of the pulse transformers being connected in a respective channel and forming the input of the respective channel, a first pair of tunnel diodes, each of the first pair of tunnel diodes being connected in series with a respective primary winding of the two pulse transformers, a pair of auxiliary DC voltage sources, a pair of adjustable resistors, respective one of the pairs of DC voltage sources and adjustable resistors



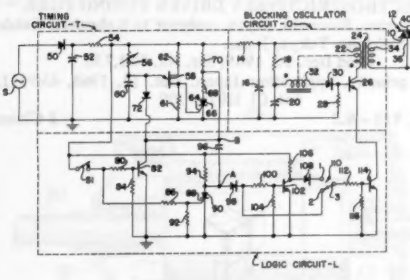
being connected in series and in series with respective primary windings of the two pulse transformers, a pair of pulse amplifiers, each of the pair of pulse amplifiers being connected to respective secondary windings of the two pulse transformers, a two-input coincidence circuit, the outputs of the two channels being connected to respective inputs of the two-input coincidence circuits, a pulse former, the pulse former being connected to the output of the coincidence circuit, and a registering device connected to the pulse former.

3,597,637

STATIC OFF-DELAY SWITCHING CIRCUIT

James J. Vandemore, Geneseo, Ill., and Donald E. Henry, Davenport, Iowa, assignors to Gulf & Western Industries, New York, N.Y.

Filed Sept. 27, 1968, Ser. No. 812,488
Int. Cl. H03k *17/26*
U.S. Cl. 307—252 B **8 Claims**



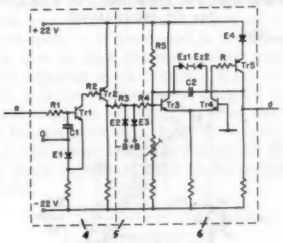
There is provided an off-delay switching circuit for switching an alternating-voltage supply source across a load at a predetermined period of time after an input signal changes from a first level to a second level, comprising a first electronic control means, such as a triac, having a first, second, and control electrode, and exhibiting the characteristic of presenting a low impedance to current flow from the voltage source to the load when a forward biasing signal is applied to the control electrode; and, circuit means for applying a forward biasing signal to the control electrode of the electronic control means. The circuit means includes first and second actuatable switching means for, when both are actuated, applying a forward biasing signal to the control means; means for periodically, and at a given frequency, actuating the first actuatable switching means; first circuit means responsive to the input signal for developing an output signal at a predetermined time after the input signal changes from the first level to the second level; and, a second electronic control means having a first, second, and control electrode, and exhibiting the characteristics of providing a low impedance to the flow of current between the first and second electrodes from a voltage source coupled across the first and second electrodes upon application of the first level input signal to the control electrode and maintaining the low impedance upon application of the second level input signal to the control electrode until the output signal developed by the first circuit means is applied to the first electrode. The first electrode of the second electronic control means is coupled to the second actuatable switching means to thereby actuate the first electronic control means at a predetermined time after the input signal changes from a first level to a second level.

3,597,638

MULTIPHASE WAVEFORM GENERATOR

Arne Jensen, Havnbjerg, Als, Denmark, assignor to Panfoss A/S, Nordbog, Denmark

Filed Aug. 26, 1968, Ser. No. 755,190
Claims priority, application Germany, Aug. 29, 1967, D 53954
Int. Cl. H03k *5/00*
U.S. Cl. 307—261 **11 Claims**



An electrical three-phase generator and motor control circuit. The generator is made of three alike wave-generating units in cascade each generating a respective trapezoidal wave corresponding to a respective phase of the generator. Each unit comprises a small detector in series with a control circuit varying the amplitude of the wave proportionately to a control voltage representative of and corresponding to variations of voltage from voltage sources and applied to a motor and an integrating circuit consisting of an integrating amplifier and an integrating capacitor and a double limiter in parallel therewith. The control voltage is developed by a voltage divider across the motor control circuit.

3,597,639

PHASE SHIFT CIRCUITS

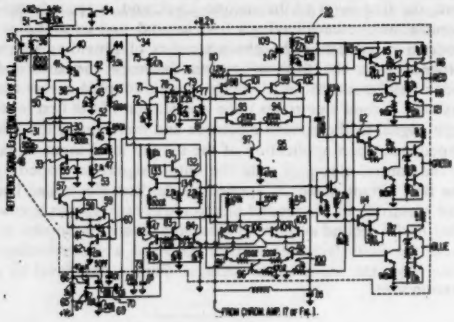
Leopold Albert Harwood, Somerville, N.J., assignor to RCA Corporation

Filed Dec. 11, 1969, Ser. No. 884,227
Int. Cl. H03k *1/12*
U.S. Cl. 307—262 **16 Claims**

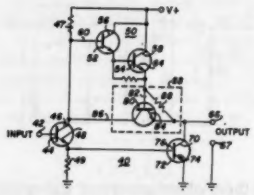
A signal is applied to an input of a differential amplifier including two active devices. The amplifier is biased so that each active device has approximately an equal current flowing therethrough.

A portion of the signal developed at the output of the first device is applied to an impedance coupled to the output of the second active device. This impedance therefore has current flow due to said signal developed at the output of said first device, and due to the signal of a different phase developed at the output of the second active device. A variable impedance path is also coupled to the output of said second device and serves to control the magnitude of current through said resistor due to the signal developed at the out-

put of said second active device. This control enables the phase of the vector sum of the two signals to vary in accordance with the magnitude of the signal as controlled by the variable impedance means.



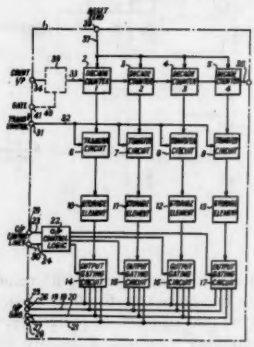
3,597,640
SHORT CIRCUIT PROTECTION MEANS FOR SEMICONDUCTIVE CIRCUIT APPARATUS
James J. Kubinec, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Apr. 10, 1969, Ser. No. 815,120
Int. Cl. H01l *19/00*
U.S. Cl. 307—303 **7 Claims**



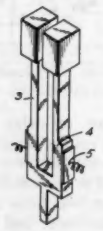
A novel emitter debiasing integrated circuit transistor configuration for providing improved short circuit protection in the output stages of logic apparatus and the like. The spreading resistance of a semiconductor device is incorporated into the output current path of the output stage and the emitter and collector of the device are appropriately connected to shunt the load current through an alternative resistive path in the circuit should the current flow through the spreading resistance exceed a predetermined value which is determined by the emitter debiasing potential of the semiconductor device.

3,597,641
INTEGRATED CIRCUIT CHIPS
Neville Leigh Ayres, Leatherhead Surrey, England, assignor to AMF International Limited, London, England
Filed May 19, 1969, Ser. No. 825,799
Claims priority, application Great Britain, May 17, 1968, 23576/68
Int. Cl. H03k *21/12*
U.S. Cl. 307—303 **9 Claims**

The present invention provides an integrated circuit package having a plurality of package connection electrodes and containing a semiconductor chip, the semiconductor chip having formed thereon a first chain of *n* first count to X circuit elements each having an individual output, an input terminal to the chain connected to a first of said connection electrodes, a reset terminal for the chain connected to a second of said connection electrodes, said first chain being arranged to divide by X^n, a plurality of storage count to X circuit elements associated one with each of said *n* first count to X circuit elements, each said storage count to X circuit elements having an individual input and an individual output, a plurality of transfer gate circuit elements interposed one between the individual output of each said first count to X circuit element and the individual input of its associated storage count to X circuit element, each said transfer gate having a control input terminal for a signal to transfer the content of its respective first count to X circuit element to its associated storage count to X circuit element and the input terminals of all said transfer gates being connected to a third of said connection electrodes, and a plurality of output gate circuit elements associated one with each said storage count to X circuit element and connected to the output thereof, each said output gate gate circuit element having an output connected to a first group of said connection electrodes and a control input terminal operatively connected to a second group of said connection electrodes so that the content of each said storage count to X circuit element may be made selectively available at said second group of connection electrodes.



3,597,642
ELECTROSTRICTIVELY DRIVEN TUNING FORK
Kikuo Kurino, Suwa-shi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Dec. 10, 1969, Ser. No. 883,730
Claims priority, application Japan, Dec. 13, 1968, 43/91113
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.2 **2 Claims**



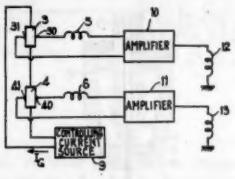
An electrostrictively driven tuning fork having tines of nonuniform thickness and at least one electrostrictive element fixed to the thicker root portion of said tines.

3,597,643

TACHOMETER NEGATIVE FEEDBACK DEVICE FOR A HALL EFFECT DC MOTOR

Marc Bregeault, and Bernard Grancoin, both of Paris, France, assignors to Thomson-CSF

Filed Feb. 11, 1970, Ser. No. 10,398
Claims priority, application France, Feb. 17, 1969, 69/03853
Int. Cl. H02k
U.S. Cl. 310—10 9 Claims



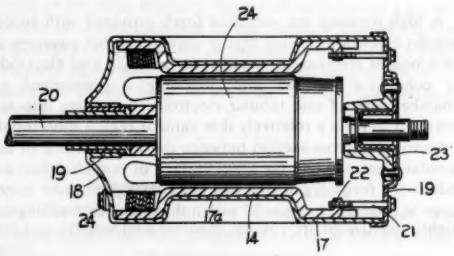
A tachometer negative feedback device, for a Hall effect DC motor having a resolver whose stator carries two Hall generators and whose rotor has *p* pairs of poles of permanent magnetization, and a motor element, whose stator carries two windings respectively supplied by these Hall generators and whose rotor is similar to that of the resolver and coupled to it. This device comprises two auxiliary coils, respectively associated with the Hall generators and located on the stator of the resolver, at the same predetermined angular distance from their associated Hall generators, to within a multiple of π/p. Each coil is connected in series with its associated Hall generator.

3,597,644

DYNAMO ELECTRIC MACHINES AND YOKE ASSEMBLIES THEREFORE

Kenneth Preece, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 3, 1969, Ser. No. 854,849
Claims priority, application Great Britain, Sept. 13, 1968, Jan. 14, 1969, 43577/68; 2193/69
Int. Cl. H02k
U.S. Cl. 310—40 1 Claim



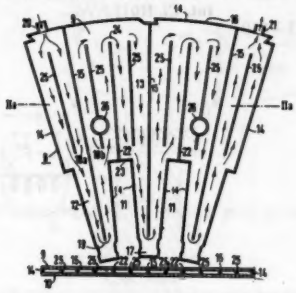
In a dynamo electric machine, the poles of the machine are recessed on their outer faces and are contained within a casing which is deformed into the recesses to thicken the poles. Some of the poles have tags for receiving bolts holding in position an end bracket defining one bearing for the rotor assembly. The poles may be in two portions, with the two portions defining a space for receiving the stator winding of the dynamo electric machine.

3,597,645

LIQUID COOLING SYSTEM FOR STACKS OF STATOR LAMINATIONS OF ELECTRICAL MACHINERY

Heinrich Duffert, and Werner Flach, both of Mulheim, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed June 25, 1969, Ser. No. 836,299
Claims priority, application Germany, June 26, 1968, P 17 63 579.9
Int. Cl. H02k 9/19
U.S. Cl. 310—54 6 Claims



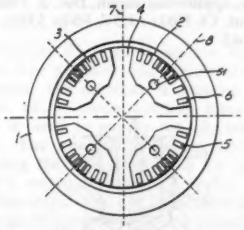
Radially extending cooling slots are provided between adjacent ones of a plurality of stack portions intermediate the end pressure plates of an electrical machine at least in the vicinity of the end pressure plates. Each of a plurality of liquid chamber sections is positioned in a corresponding one of the cooling slots in close thermal contact with each of the corresponding adjacent stack portions. Each of the sections is substantially a sector of an annulus adapted to form an annulus with others of the sections. Each of the sections has teeth formed therein in its area closer to the axis of the annulus. Cooling liquid is supplied to and removed from a plurality of cooling paths formed in each of the sections including the teeth thereof.

3,597,646

DYNAMOELECTRIC MACHINES

Peter John Lawrenson, 11 Cookridge Ave., Leeds 16, Yorkshire, England

Continuation-in-part of application Ser. No. 633,103, Apr. 27, 1966. This application Jan. 26, 1970, Ser. No. 5,599
Int. Cl. H02k 17/42
U.S. Cl. 310—166 12 Claims



A reluctance motor has a rotor constructed of separate segments of magnetic material and a squirrel cage winding, the conductor bars of which are arranged so that the cross section of conductive material decreases from a maximum in the central regions of the segments to a minimum in the vicinity of the ends of the segments. For example there may be no bars in the gaps and wider bars or bars spaced more closely together in the central regions. Shallow central channels with at least the vestiges of separate slots may be provided, the slots serving to maintain the value of the direct axis leakage reactance of the rotor winding. Towards the segment ends the slot shapes may be varied to reduce leakage

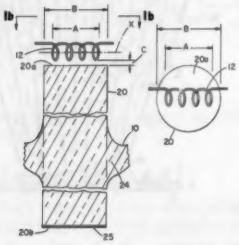
reactance and increase the resistance. In addition, the segments may be provided with tips extending circumferentially outwardly. Also, holes may be provided close to the bases of the winding slots to cause saturation of the magnetic material between the holes and the slots. Yet again flux barriers may be provided beneath the winding slots.

3,597,647

FILAMENT RADIATION SOURCE

Michael L. Rishton, Reading, Mass., assignor to Dyonics, Inc., Woburn, Mass.

Filed Oct. 23, 1969, Ser. No. 868,727
Int. Cl. H01j 5/16
U.S. Cl. 313—110 15 Claims



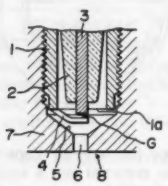
Filament radiation source in which an elongated collector-emitter rod protrudes through the bulb envelope, with a collector face immediately adjacent the filament inside the envelope and an emitting face spaced substantially beyond the envelope wall. Deposit of filament substance on the collecting face is avoided in light source applications by use of the halogen cycle. The source is shown mounted by the rigid rod for simple, accurate positioning, interfacing at a cool region with fiber optic light pipes. Axisymmetric relation of the collector emitter to the remainder of the bulb enables fitting into small cylindrical housings. Side mounting of the rod enables multiple rods to be employed.

3,597,648

COMBINATION OF SPARK PLUG AND COMBUSTION CHAMBER HAVING CONNECTED CONICAL AND CYLINDRICAL SECTIONS

Masao Shibagaki, Asa-gun, and Ikuo Ogasawara, Nagoya, both of, Japan, assignors to Toyo Kogyo Co., Ltd., Aki-Gun and NGK Spark Plug Co. Ltd., Nagoya, Japan

Filed Nov. 28, 1967, Ser. No. 686,166
Claims priority, application Japan, Dec. 2, 1966, 41/109731
Int. Cl. H01t 13/54; F02b 53/00
U.S. Cl. 313—143 2 Claims



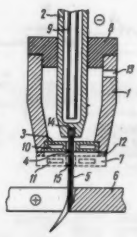
A spark plug for use in a rotary engine, having an outer electrode projected from the lower end surface of the metal shell of the spark plug along and spaced apart from an inverted conical surface of an ignition opening of the rotary engine to locate a spark discharge gap near a combustion chamber.

3,597,649

DEVICE FOR PLASMA-ARC TREATMENT OF MATERIALS

David Grigorievich Bykhovsky, Konjushenny pereulok, 1/6, kv. 18, and Alexandr Yakovlevich Medvedev, ulitsa Kalyaeva, 3, kv. 4, both of Leningrad, U.S.S.R.

Filed Feb. 11, 1969, Ser. No. 798,348
Claims priority, application U.S.S.R., Feb. 15, 1968, 1,218,055
Int. Cl. H01j 17/04
U.S. Cl. 313—211 3 Claims



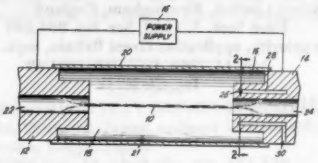
A device for plasma-arc treatment of materials in active media wherein the cathode is made of hafnium which extends the service life of the cathode.

3,597,650

ARC RADIATION SOURCES

John E. Anderson, Katonah, and Richard C. Eschenbach, Somers, both of, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 652,384, June 12, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 461,874, June 7, 1965, now abandoned.
This application Sept. 23, 1969, Ser. No. 865,230
Int. Cl. H01j 7/24
U.S. Cl. 315—111 4 Claims



A high pressure arc radiation torch provided with spaced tubular electrodes having axially aligned gas exit passages; an envelope of transparent material surrounding said electrodes in concentric relation and providing a pressurized gas chamber; one of said tubular electrodes extending into said chamber to form a relatively thin annular region substantially cylindrical in cross section between the outer surface of said tubular electrode and the inner surface of said chamber, and means for feeding gas into said annular region under conditions to provide strong swirl within the chamber resulting in a highly constricted arc column of substantial length.

3,597,651

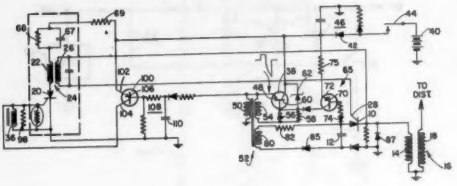
CIRCUIT TO PREVENT ENGINE REVERSAL IN A CAPACITOR DISCHARGE IGNITION SYSTEM

Arthur G. Hufton, Elk Grove Village, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 22, 1969, Ser. No. 852,312
Int. Cl. H05b 37/02
U.S. Cl. 315—209 7 Claims

A resistive element is connected across a variable reluctance pickup used for generating a potential to initially

charge and subsequently discharge the capacitor of an ignition system, thereby shunting a portion of the generated potential to ground. With the ignition system being energized but not operating, a transistor conducts to apply a bias potential to the pickup, to modulate the partially shunted



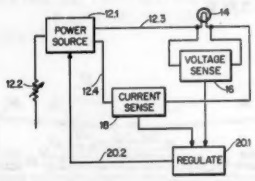
generated pulses. A level detector is triggered when the generated pulses reach a given level to initially operate a blocking oscillator for charging the ignition capacitor and to subsequently discharge the same. If the engine kicks back on starting, the shunt circuit prevents operation of the level detector.

3,597,652

APPARATUS FOR MAINTAINING THE TEMPERATURE AND OPERATING A CALIBRATED LAMP IN A CONSTANT RESISTANCE MODE

Percival T. Gates, Jr., Weston, Mass., assignor to EG&G, Inc., Bedford, Mass.

Filed Jan. 14, 1969, Ser. No. 790,984
Int. Cl. H05b *41/16, 41/24*
U.S. Cl. 315—255 **8 Claims**



The resistance of an incandescent lamp filament, subject to ambient variations, is determined by sensing the current and voltage of the lamp filament. Since the resistance is a known function of the temperature of the filament, changes in the temperature of the filament are sensed to provide an output correction signal to a power supply which adjusts the input parameters of the lamp to maintain filament temperature constant.

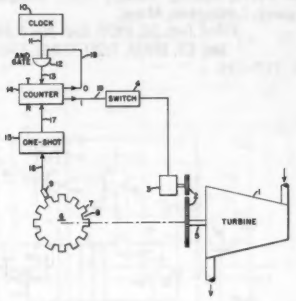
3,597,653

DIGITAL LOW SPEED SWITCH

James H. Moore, Scotia, and Ernest J. Schirmer, II, Highland, both of, N.Y., assignors to General Electric Company

Filed Apr. 17, 1970, Ser. No. 29,531
Int. Cl. H02p
U.S. Cl. 317—5 **6 Claims**

A low speed indicator for detecting very low speeds of a rotating shaft has digital logic elements and a single sensor so that if shaft rotation stops or falls below the desired minimum speed, the device will actuate a switch to sound an alarm or automatically engage the turning gear of a turbine. A digital clock generates a preset frequency of pulses which is compared to the frequency of pulses generated by a sensor positioned near a toothed wheel, on the turbine shaft and if the proper condition exists, a counter produces a logic "1" to actuate a switch for engaging the turning gear or sounding an alarm.

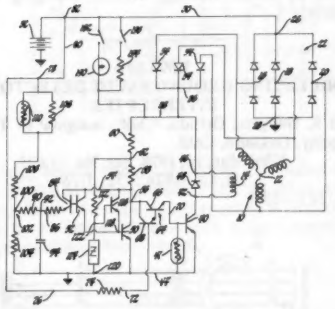


3,597,654

PROTECTIVE CIRCUIT FOR A VOLTAGE REGULATOR

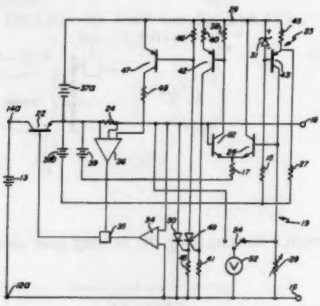
Glen E. Harland, Jr., and Charles G. Hanson, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 15, 1969, Ser. No. 858,029
Int. Cl. H02h *3/14, 9/04*
U.S. Cl. 317—13 B **12 Claims**



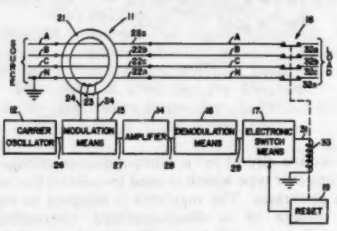
A protective circuit for a semiconductor voltage regulator of the transistor type which is used to control the output voltage of a generator. The regulator is adapted to regulate the output voltage of a diode-rectified alternating current generator that is used to supply the electrical loads on a motor vehicle. The generating system includes auxiliary diodes for feeding the field winding of the generator under the control of a switching transistor device which forms a part of the voltage regulator. The protective circuit regulates the output voltage of the generator at a value which is higher than the desired regulated voltage in the event that a disconnection occurs in the system which would otherwise cause a destructive high voltage output from the generator. This protective circuit includes a voltage divider formed in part by a temperature sensitive resistance. The voltage divider is coupled to a semiconductor such as a forward biased diode or a transistor and when the voltage applied to the field circuit of the generator rises to a predetermined value the protective circuit operates to control the output transistor stage of the voltage regulator to limit the output voltage of the generator to a value which is higher than its normal operating value but which is low enough to prevent destruction of the semiconductor components of the voltage regulator.

3,597,655
OVERVOLTAGE PROTECTIVE CIRCUIT FOR CONSTANT VOLTAGE-CURRENT CROSSOVER NETWORK
Luciano Forte, Spring Valley, N.Y., assignor to Raytheon Company, Lexington, Mass.
Filed Jan. 26, 1970, Ser. No. 5,503
Int. Cl. H02h *3/20*; **G05f** *1/40*
U.S. Cl. 317—16 **14 Claims**



A crowbar circuit for overvoltage protection of loads in which the setting of the overvoltage crowbar trip point is made without activating the crowbar circuit. Normally, the setting is made by adjusting the power supply to the voltage trip level desired and then setting the crowbar sense network until activation occurs. This procedure is considered dangerous for the load during "online" operation of power supplies. The invention permits setting the crowbar actuation on trip level by meter reading without changing the power supply level.

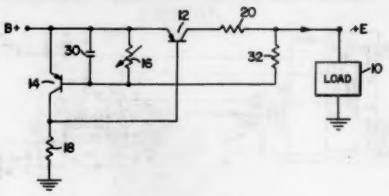
3,597,656
MODULATING GROUND FAULT DETECTOR AND INTERRUPTER
Ellwood S. Douglas, Orinda, Calif., assignor to The Rucker Company, Oakland, Calif.
Filed Mar. 16, 1970, Ser. No. 19,625
Int. Cl. H02h *3/32*, *3/28*
U.S. Cl. 317—18 R **23 Claims**



Ground fault detector and interrupter in which a ground fault signal is modulated onto a carrier signal before it is processed. After processing, the modulated carrier is demodulated, and the fault signal is available for actuating a current interrupter or other monitoring device.

3,597,657
CURRENT LIMITER FOR POWER SUPPLIES
Bo G. Fredricsson, San Francisco, Calif., assignor to Lynch Communication Systems, Inc., San Francisco, Calif.
Filed Mar. 17, 1969, Ser. No. 807,669
Int. Cl. H02h *9/02*
U.S. Cl. 317—22 **4 Claims**

A self-resetting current limiter for power supplies achieves control of large currents with low-dissipation transistors by providing a normally saturated transistor in series with the load. A control transistor whose base is connected to sense any overload-caused drop across the saturated transistor controls the base potential of the series transistor in such a manner as to bias the series transistor into a current-limiting condition by a snap action as soon as an overload occurs. The resulting additional drop across the series transistor

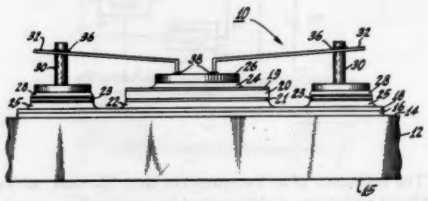


locks the control transistor in the current-limiting control condition. When a decrease in load increases the load voltage to a level sufficient to unlock the control transistor, the series transistor snaps back into its normal condition. The parameters of the circuit can be made such that release of the control transistor cannot occur until the load is well below the overload tripping level.

ERRATUM

For Class 317—230 see:
Patent No. 3,596,370

3,597,658
HIGH CURRENT SEMICONDUCTOR DEVICE EMPLOYING A ZINC-COATED ALUMINUM SUBSTRATE
John Rivera, Raritan, N.J., assignor to RCA Corporation
Filed Nov. 26, 1969, Ser. No. 880,328
Int. Cl. H01l *3/00*, *5/00*
U.S. Cl. 317—234 R **4 Claims**

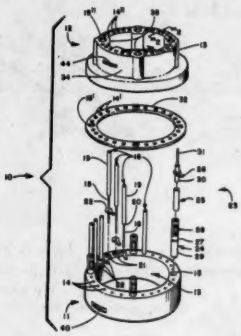


The device structure includes a zinc layer on an aluminum substrate, and a layer of nickel on the zinc layer. A pedestal member which has a semiconductor device mounted thereon, is joined to the nickel with a brazing material which has a melting temperature below that of the aluminum substrate, and wets well to nickel.

3,597,659
MOUNT FOR ELECTRONIC CIRCUITS AND THE LIKE AND METHOD FOR MAKING SAME
Carl K. Hoffman; John A. Laster, and George R. Urish, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 24, 1969, Ser. No. 860,526
Int. Cl. H02b *1/04*
U.S. Cl. 317—101 D **3 Claims**

A mount for electronic circuits and the like including two annularly or cylindrically shaped frames mountable one upon the other to form an interior cavity, each frame having a plurality of axially extending holes through the walls thereof to receive a plurality of service conductors, and a plurality of key-shaped tabs extending from the service conductor into the interiorly defined cavity between the two frames, and

being adhesively secured to the other frame. A plurality of coaxial feedthrough conductors may also be axially disposed within the frame walls to carry signals therethrough without disturbing or interfering with the operation of the electronics contained within the cavity. The method for making the mount includes the steps of forming the frames, forming the



key-shaped tabs on a single central support portion of a solder coated sheet, placing and soldering each service conductor in a hole in one of said key-shaped tabs, disposing the service conductors and key-shaped tab assembly within the holes in the frames, affixing the frames together, and removing the central support portion.

3,597,660

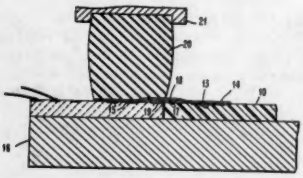
HIGH-DENSITY CIRCUITS CONNECTOR

Stanley M. Jensen, Apalachin; Thomas J. Kopl, Endicott; Vincent P. Subik, Binghamton; Henry R. Tatko, Endicott, and Gordon L. Williams, Vestal, all of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1969, Ser. No. 883,706

Int. Cl. H02b *1/02*

U.S. Cl. 317—101 CC **7 Claims**



A high-density circuits connector assembly for interconnecting the edge conductors of module circuit boards with the I/O (input/output) circuits conductors of a cabling network of a data processing system. The connector assembly comprises signal and ground overlays formed by printed circuit techniques to provide conductive copper paths affixed to a flexible thin layer of polyimide material which are registered and attached at the edges of the module boards. An interconnecting contact pressure is achieved by a force mechanism comprising a resilient pad directly in contact with the overlays and a pressure-applying mechanism. The overlays function as a matched impedance I/O connector for interconnecting the module circuits boards with the other circuits wiring of a data processing system.

3,597,661

MONITORING AND SHUTDOWN APPARATUS

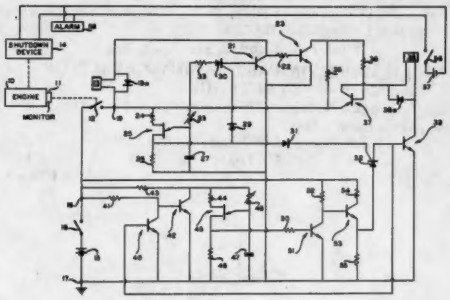
Sherrill F. Isaacs, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Mar. 13, 1970, Ser. No. 19,205

Int. Cl. H01h *47/32*

U.S. Cl. 317—135 **5 Claims**

A control circuit for a monitoring device employs two timing elements of different durations. A signal from the monitor actuates the shorter duration-timing element, and the output from this timing elements actuates the longer duration timing element. An alarm or shutdown control is actuated if



a second signal is received from the monitor during the timing interval of the longer duration-timing element.

3,597,662

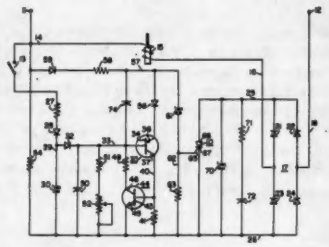
OFF DELAY SOLID-STATE TIME DELAY APPARATUS

Wardell Gary, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 28, 1968, Ser. No. 732,720

Int. Cl. H01h *47/32*

U.S. Cl. 317—141.5 **11 Claims**



An off delay circuit utilizes an output controlled rectifier together with diodes and transistors and an RC network to provide time delay. The controlled rectifier is maintained in conduction by a controllable half cycle trigger current and a half cycle phase shifted load current.

3,597,663

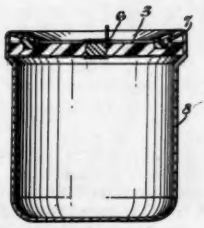
ELECTROLYTIC CAPACITOR HAVING A POURED ELASTOMER O-RING SEAL

Mark Markarian, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Dec. 17, 1969, Ser. No. 885,778

Int. Cl. H01g *1/02*

U.S. Cl. 317—230 **7 Claims**



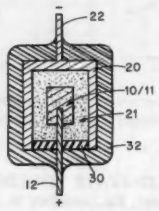
An electrolytic capacitor seal is formed by pouring a liquid polymerizable elastomer either on a channel at the outer edge of a capacitor cover or on a ridge formed on the inner

diameter of the capacitor case and curing the elastomer so that it becomes heat resistant and resilient and in effect producing a gasket in situ upon either the cover or the capacitor case.

3,597,664
NIOBIUM-ZIRCONIUM-TITANIUM CAPACITOR ELECTRODE

Gerard J. Villani, Needham, Mass., assignor to Norton Company, Worcester, Mass.

Filed Dec. 5, 1969, Ser. No. 882,482
Int. Cl. H01g *9/05*
U.S. Cl. 317—230 **10 Claims**

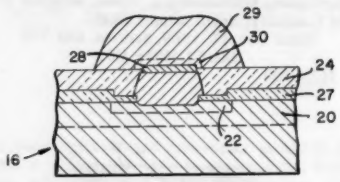


Electric capacitor comprising an electrode in powder or fabricated part form (e.g. wire or sheet) made of a ternary niobium-zirconium-titanium alloy with an oxide film on the electrode surface as capacitor dielectric. The alloy is selected as to composition and treated to produce and retain the Beta (body-centered cubic) phase. The resultant product affords high-capacitor stability and low leakage approaching the characteristics of the more expensive tantalum at a capacitance cost comparable to or better than that of niobium.

3,597,665
SEMICONDUCTOR DEVICE HAVING LARGE METAL CONTACT MASS

John G. Quetsch, Jr., Anaheim, and Frank J. Saia, Costa Mesa, both, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 352,148, Mar. 16, 1964, Pat. No. 3,361,952. Filed Aug. 14, 1967, Ser. No. 670,487
Int. Cl. H01l *1/14, 9/12*
U.S. Cl. 317—234 R **2 Claims**

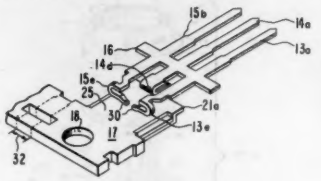


A semiconductor device having a relatively large, low-penetration metal contact mass extending through a passivating layer on a planar surface for assembly or lead attachment. The contact may be formed by silver metal bonded by gold to a silicon device in the plane of the passivating layer with additional metal mass bonded to the first metal mass.

3,597,666
LEAD FRAME DESIGN

Hugo G. Taskovich, Palo Alto, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Nov. 26, 1969, Ser. No. 879,998
Int. Cl. H01l *5/00*
U.S. Cl. 317—234 R **11 Claims**

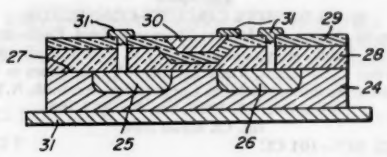


A lead frame strip contains a plurality of groups of leads, each group spring locking a semiconductor die between an extension of the collector lead and extensions of the base and emitter leads prior to soldering the die to the leads.

3,597,667
SILICON OXIDE-SILICON NITRIDE COATINGS FOR SEMICONDUCTOR DEVICES

Fordyce H. Horn, Schenectady, N.Y., assignor to General Electric Company

Filed Mar. 1, 1966, Ser. No. 530,811
Int. Cl. H01l *11/00*
U.S. Cl. 317—235 **11 Claims**

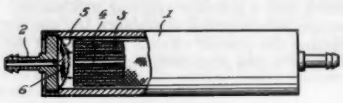


Semiconductor devices having improved surface coatings to provide surface passivation and/or electrical insulation include a composite insulating layer. Insulating layer has a first layer of oxide covering and insulating the semiconductor surface. A second layer of silicon nitride is formed over the oxide layer and adds its greater density and lack of permeability characteristics to the insulating characteristics of the oxide.

3,597,668
ELECTROSTATIC CHARGER FOR LIQUID FUEL BY FRICTION

Kunio Yoshimine, Tokyo, Japan, assignor to Goro Fujii, Tokyo, Japan, a part interest

Filed Oct. 16, 1969, Ser. No. 866,990
Claims priority, application Japan, Oct. 17, 1968, 43/75262
Int. Cl. H01g *1/00*
U.S. Cl. 317—262 **9 Claims**



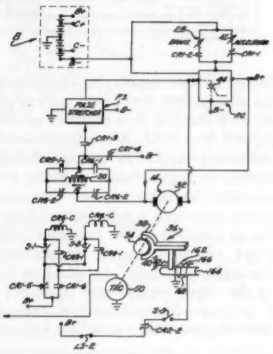
A static charger for electrostatically charging liquid fuel comprises a friction element adapted to be installed within a fuel feed pipe adjacent the carburetor of an internal combustion engine. The friction element comprises a metal sheet or mesh rolled into a roll around a core and frictionally contacts the liquid fuel thereby electrostatically charging the liquid fuel.

3,597,669

ELECTRICAL BRAKING SYSTEM FOR ELECTRIC MOTOR-DRIVEN VEHICLES

Daniel J. Soltz, Norristown, Pa., assignor to Eaton Yale & Towne Inc.,, Cleveland, Ohio

Filed Apr. 30, 1970, Ser. No. 33,181
Int. Cl. H02k *17/14*
U.S. Cl. 318—17 19 Claims



An electrical braking system is provided for a vehicle driven by an electric motor, having a field winding arranged so that the vehicle is driven in a direction in accordance with the direction of direct current flowing through the filed winding. The system, which is adapted to be carried by such a vehicle, includes a movable brake member adapted to be mounted to the vehicle for movement between a normal first position and a second position. Circuit means, which may include a variable resistor, serves to vary the amount of direct current applied to the field winding in dependence upon the relative position of the brake member between the first and second positions. An electrical sensing circuit is utilized to sense whether the vehicle is traveling in a forward or reverse direction. A current direction control circuit serves to control the direction of direct current through the field winding so as to flow in a direction opposite to that required for driving a vehicle in the sensed direction. In this manner, the electrical motor is electrically braked to thereby retard motion of the vehicle in the sensed direction substantially in proportion to the relative position of the brake member.

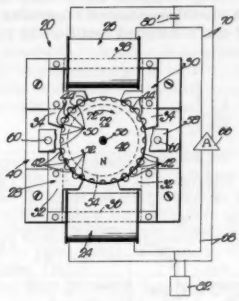
3,597,670

DIRECT-CURRENT OPERATED SYNCHRONOUS MOTOR

Walter Kohlhagen, Elgin, Ill., assignor to The Bunker-Ramo Corporation, Broadview, Ill.

Continuation of application Ser. No. 681,171, Nov. 7, 1967, now abandoned. This application July 1, 1970, Ser. No. 56,102
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 10 Claims

The disclosure deals with an electromechanical device having a rotor with associated pickup and drive coils, with the signals induced on rotor rotation in the pickup coil being by an amplifier supplied at amplification to the drive coil. The device features frequency control by a high frequency source such as an oscillator of inherent high rate stability, with the high frequency being injected into the electric circuit of the



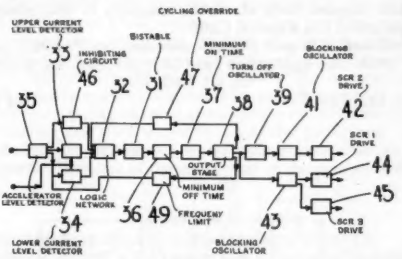
device so that this circuit will operate at a frequency which is an invariable submultiple of the high frequency.

3,597,671

MOTOR SPEED SYSTEM WITH SWITCHING FREQUENCY CONTROL

Derek Stanley Adams, Shirley, Solihull, and Michael Ainley Thompson, Birmingham, both of, England, assignors to Joseph Lucas Industries, Limited, Birmingham, England

Filed July 10, 1969, Ser. No. 840,674
Claims priority, application Great Britain, July 17, 1968, 33981/68
Int. Cl. H02p *7/28*
U.S. Cl. 318—332 8 Claims



An electric traction system and a drive motor, an electronic switching device in series with the motor for controlling current flow through the motor, and a switching circuit for turning the device off at a first current level in the motor and on at the second lower current level in the motor. Manually operable means varies at least one of the current levels for controlling the speed of the motor, and frequency detecting means is provided for detecting the switching frequency and adjusting at least one of the current levels independently of the manually operable means to maintain the switching frequency below a predetermined value.

3,597,672

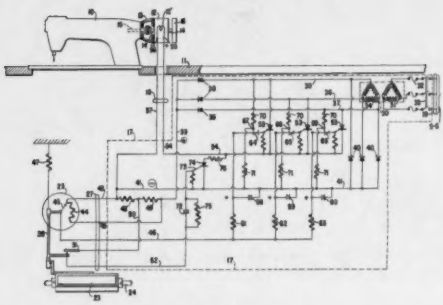
ELECTRICAL DRIVE SYSTEMS FOR SEWING MACHINES

Henry A. Seesselberg, South Plainfield; Richard Beck, Morris Plains, and Benjamin T. Bernstein, Metuchen, all of, N.J., assignors to The Singer Company, New York, N.Y.

Filed Dec. 30, 1968, Ser. No. 787,797
Int. Cl. H02p *3/12*
U.S. Cl. 318—269 6 Claims

An electrical drive system for a sewing machine has a low-inertia DC motor drivingly coupled directly to the main shaft of the sewing machine. The motor is preferably of the type having a single low-inertia low-inductance armature im-

mersed in a field of constant flux. A bridge rectifier using sequentially-fired drive-controlled rectifiers supplies variable direct current to the armature from a commercial AC source. A fixed rectifier bridge supplies a reference voltage which is controlled by an operator-actuated controller to phase control the firing of the controlled rectifiers to provide running



speed control. The armature-generated back E.M.F. is used automatically as a speed feedback signal opposed to the reference voltage to provide good speed regulation with respect to load variations. A separate stop controlled rectifier is rendered conductive responsive to a command initiated by the controller to provide dynamic braking of the motor for quickly stopping tee sewing machine.

3,597,673

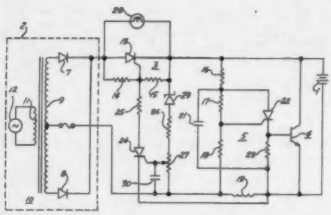
RAPID CHARGING OF BATTERIES

Wilford B. Burkett, Pacific Palisades, and John H. Bigbee, III, Los Angeles, both of, Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 744,902, July 15, 1968. This application June 26, 1969, Ser. No. 836,791

Int. Cl. H02j *7/10*

U.S. Cl. 320—5 **14 Claims**



A battery is charged in a very short period of time, for example less than 15 minutes, by applying a charging current that is in excess of the nominal 1-hour rate of the battery with discharge pulses sandwiched between charge pulses, with or without a rest period between the end of the charge pulse and the beginning of a discharge pulse and the end of the discharge pulse and the beginning of a charge pulse. The discharge pulse has a peak value in excess of the nominal 1-hour rate of the battery and the pulse has a short period, for example 1 to 4 microseconds, which time may be related to the time associated with the electrochemical characteristics and construction of the cell or cells of the battery being charged. The frequency of the discharge pulses is increased as the terminal voltage and charge of the battery increases. The charging at the high rate is terminated or converted to a trickle charge when the terminal voltage of the battery exceeds a selected voltage level associated with the desired level of charge in the battery. The disclosure relates to both the method of rapid charge and apparatus for rapid charging.

3,597,674

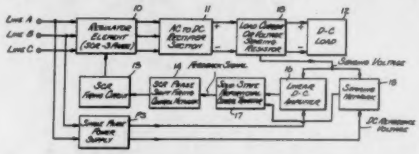
SOLID-STATE REGULATION OF POWER SUPPLIES

Harold G. Abbey, 1130 Parker Ave., Detroit, Mich.

Filed June 11, 1969, Ser. No. 832,157

Int. Cl. H02m *7/12*

U.S. Cl. 321—5 **9 Claims**



A regulated power supply in which voltage from an AC power line is supplied through a power-regulating element, such as an SCR device, to a rectifier section whose DC output is supplied to a load. A relatively small sensing voltage, linearly reflecting current or voltage changes in the load circuit, is applied through a linear amplifier to the base of a proportional control transistor circuit. The sensing voltage, combined algebraically with a reference voltage is also applied to the emitter to produce in the collector output circuit a feedback voltage which is linearly proportional to the sensing voltage throughout a broad range. The feedback voltage is applied to the regulator element to adjust the output of the supply so as to compensate for said changes in the load circuit and thereby maintain a constant DC output.

3,597,675

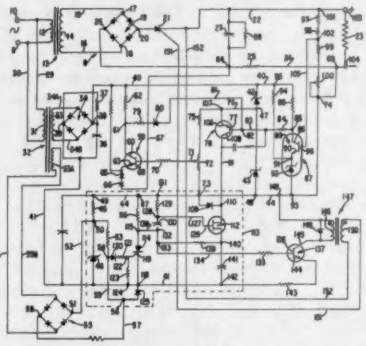
PULSE WIDTH MODULATED DC POWER SUPPLY

John E. Peek, Addison, and Milan Smrcka, Hickory Hills, both of, Ill., assignors to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed May 12, 1969, Ser. No. 823,875

Int. Cl. H02m *1/08;* **H02h** *7/14*

U.S. Cl. 321—14 **7 Claims**



An AC to regulated DC power supply utilizing pulse width modulation wherein the output side of a high leakage reactance transformer or the like is directly connected to a rectifying bridge, a regulating thyristor is serially connected in the output from the bridge, and a capacitor is connected across the output lines of the bridge on the load side of the thyristor. Voltage and/or current regulation is provided by a control circuitry for the thyristor which includes voltage node control of a unijunction timing circuit wherein the timing cycle is controlled by a periodically pulsed SCR.

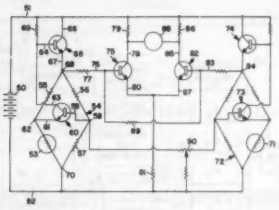
ERRATUM

For Class 321—43 see:
Patent No. 3,596,369

3,597,676
THERMISTOR CIRCUIT FOR USE IN AN ANGULAR MOVEMENT SENSING DEVICE

Alvin G. Moore, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser. No. 632,239, Apr. 20, 1967, now Patent No. 3,500,691. This application June 5, 1969, Ser. No. 830,825
Int. Cl. G05f *1/58*
U.S. Cl. 323—20 **3 Claims**

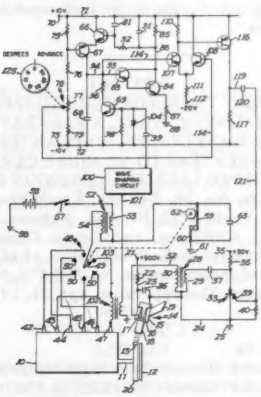


A circuit for measuring the difference in cooling imposed upon two thermistors, which circuit is particularly adapted for use in a sensing device wherein a fluid jet is deflected relative to the thermistors in response to angular movement, and comprises a bridge for electrically heating each thermistor and thus lowering its resistance until the bridge is balanced, and a difference in the power consumption required to maintain each thermistor at its equilibrium temperature is an indication of the unequal cooling imposed upon the thermistors, which, in a fluid-jet-type angular rate sensor, is an indication of the deflection of the fluid jet from a centered condition relative to the jets which is in turn an indication of the rate and direction of angular movement.

3,597,677
STROBOSCOPIC SPARK ADVANCE MEASURING APPARATUS

Richard S. MaC Crea, New Brighton, and Joseph A Marino, Hopkins, both of, Minn., assignors to Marquette Corporation

Filed Oct. 28, 1968, Ser. No. 771,133
Int. Cl. F02p *17/00*
U.S. Cl. 324—17 **7 Claims**

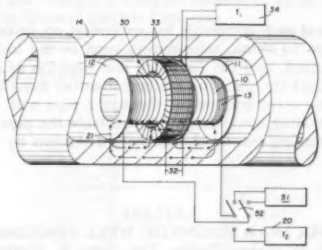


Apparatus for determining the spark advance of an internal combustion engine by the use of a stroboscopic lamp in which a sawtooth voltage is initiated with the occurrence of a regularly repeating electrical impulse such as the firing of a particular spark plug and in which the stroboscopic lamp is energized during each cycle of the sawtooth voltage when the instantaneous amplitude of the sawtooth voltage reaches a predetermined value, the selected value of the instantaneous amplitude being determined by an adjustable means which selects a portion of the sawtooth voltage and applies it to a voltage comparison circuit which in turn controls the conductivity of the lamp. The adjusting means is calibrated in degrees of the cycle of the operation of the engine. The amplitude of the sawtooth voltage is determined by a capacitor charging circuit and the timing rate of the capacitor charging circuit is adjusted in accordance with its maximum amplitude to maintain the same constant.

3,597,678
APPARATUS FOR SENSING THICKNESS VARIATIONS, DISCONTINUITIES, AND THE LIKE IN ELONGATED STEEL STRUCTURES BY MEASURING VARIATIONS IN MAGNETIC PROPERTIES UTILIZING A FLUX GATE

Robert E. Fearon, Tulsa, Okla., assignor to Williams Brothers Company, Tulsa, Okla.

Filed Dec. 24, 1968, Ser. No. 786,657
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **12 Claims**

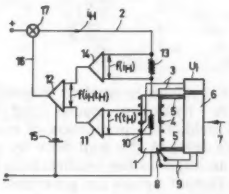


A ferromagnetic pipe section is magnetically energized parallel to its axis at a low frequency and flux intensity, and a subsection of the energized section is sensed circumferentially to generate a signal responsive to changes in the magnetic character of the pipe comprising the said subsection. The sensing apparatus includes an annularly shaped, axially outwardly facing channel containing a circumferentially wound sensing coil surrounded by a toroidal gating coil. Associated circuitry generates a signal indicative of changes in the magnetic character of the subsection of the pipe sensed.

3,597,679
DEVICE FOR MEASURING MAGNETIC FIELD STRENGTH USING A HALL PROBE AND COMPRISING MEANS FOR SUPPRESSING ALTERATIONS OF THE HALL VOLTAGE DUE TO TEMPERATURE FLUCTUATIONS

Karleugen Habfast, Bremen, Germany, assignor to Varian Mat GmbH, Bremen, Germany

Filed Mar. 10, 1969, Ser. No. 805,447
Claims priority, application Germany, Mar. 13, 1968, P 16 16 916.6
Int. Cl. G01r *33/06*
U.S. Cl. 324—45 **3 Claims**



The invention provides a device for measuring magnetic field strength using a Hall probe and comprising means for suppressing alterations of the Hall voltage due to temperature fluctuations, said means comprising a thermal stabiliza-

tion device for the Hall probe and a device for controlling the Hall current in such a way that the Hall voltage remains constant with a constant magnetic field.

3,597,680

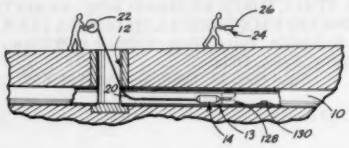
METHOD AND APPARATUS UTILIZING A TRANSMITTER AND RECEIVER FOR DETECTING THE PRESENCE OF A METALLIC OBJECT WITHIN A PIPE

Merrill K. Haddon, Portland, Oreg., assignor to Aqua-Tronics, Inc., Portland, Oreg.

Filed Dec. 19, 1968, Ser. No. 785,117

Int. Cl. G01v *3/08, 3/12*

U.S. Cl. 324—67 **3 Claims**



A method and apparatus for exploring an installed, concealed pipe to obtain information such as the location and coarse thereof, and the presence and position of a metallic object lodged therein. The method involves moving an electromagnetic wave transmitter through a pipe with the transmitter operating, and from a point outside the pipe receiving and interpreting the wave transmitted thereto by the transmitter.

3,597,681

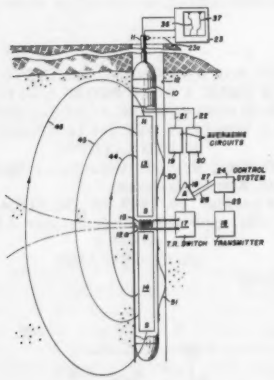
NUCLEAR MAGNETIC WELL LOGGING

William B. Huckabay, Dallas, Tex.; John K. Godbey, Dallas, Tex., and John O. Ely, deceased, late of Lexington, Mass. (by La Verne Barton Ely, executrix), assignors to Chevron Research Company

Continuation-in-part of application Ser. No. 267,264, Jan. 19, 1952, now abandoned. This application Jan. 30, 1957, Ser. No. 637,313

Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 **14 Claims**



This invention relates to nuclear magnetic resonance well logging where hydrogen nuclei are polarized in a unidirectional field. Free precession of nuclei is established at a measuring level in the well bore by generating a magnetic field at an angle to the unidirectional field and removing the same. Output signals are generated having a frequency characteristic of the precession of the macroscopic moment vector of hydrogen nuclei and a characteristic dependent upon the number of hydrogen nuclei. The output signal is then recorded in correlation with the depth of the measuring level to produce a record indicative of regions in which hydrogen atoms are concentrated.

3,597,682

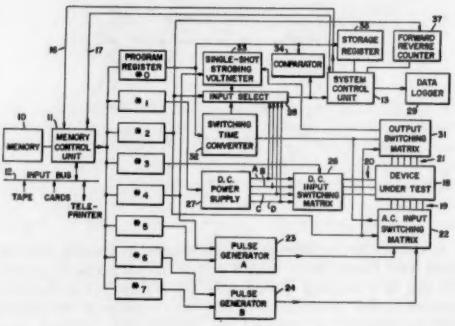
PROGRAMMABLE TESTING UNIT FOR SINGLE SHOT TESTING

John C. Hubbs, Lafayette, and Thomas E. Castanera, Oakland, both of, Calif., assignors to E-H Research Laboratories, Inc., Oakland, Calif.

Filed Nov. 12, 1968, Ser. No. 774,798

Int. Cl. G01r *15/12*

U.S. Cl. 324—73 AT **3 Claims**



A programmable testing system for testing large scale array integrated circuits and similar devices having several inputs and outputs. The device is coupled from an input standpoint to two pulse generators and several DC power supplies and from an output standpoint to a single-shot strobing voltmeter and a single-shot-switching time converter. The pulse generators, DC power supplies, switching time converter, and single-shot strobing voltmeter are programmed by individually coupled and separate program registers preloaded with instructions from a core memory. A system control unit controls the filling or loading of these program registers. The program registers also control a switching matrix to couple the device under test and their terminals to the proper inputs and outputs. The control unit senses when the test sequence is over and when the entire test on the device is completed. This provides for a completely automatic testing sequence. When one testing sequence ends and another is to begin only those program registers whose parameters are changed are reloaded thus saving essential time in the testing procedure and effectively utilizing the single-shot capability of the testing instruments.

3,597,683

CURRENT TRANSFORMER UTILIZING AN ELECTROMAGNETIC WAVE, A FARADAY ROTATOR, CIRCULAR WAVEGUIDES, HORN ANTENNAE, AND MODE CONVERTERS TO MEASURE CURRENT IN A HIGH VOLTAGE TRANSMISSION LINE

Shigebumi Saito, No. 30, 2-chome, Kamiuma-cho, Setagaya-ku, Tokyo; Yoichi Fujii, No. 844, 3-chome, Mama-machi, Ichikawa-shi, Chiba-ken, and Yutaka Ohno, No. 5-1, 4-chome, Saginomiya, Nakano-ku, Tokyo, all of, Japan

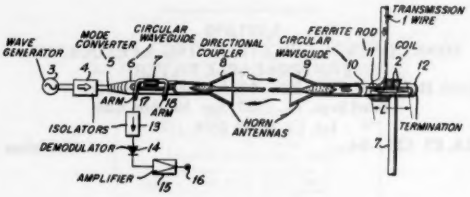
Continuation of application Ser. No. 595,170, Nov. 17, 1966, now abandoned. This application Apr. 24, 1970, Ser. No. 29,749

Int. Cl. G01r *19/00, 31/00*

U.S. Cl. 324—96 **2 Claims**

A laser beam is directed from a ground potential site to a Faraday rotation element provided in the magnetic field produced by the current in high voltage transmission line. The Faraday rotation element rotates a plane of polarization of the laser beam in accordance with the intensity of the magnetic field. The laser beam is transmitted through the Faraday rotation element to a polarization analyzer at the site. The analyzer produces an output proportional to the magnitude of the current in the line. In another embodiment, waveguide means are used to direct an electromagnetic wave from a ground potential site to a Faraday rotation element in

the magnetic field produced by the current in the high voltage transmission line and back to the ground potential site.



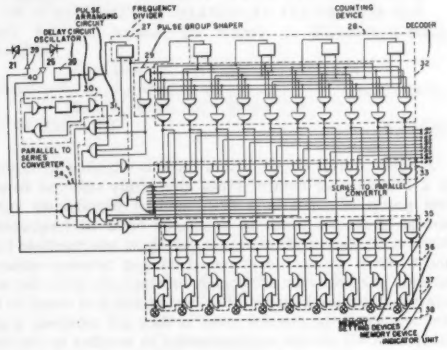
The wave is transmitted and received along the same path between a pair of horn antennae.

3,597,684

OPTICALS METHOD UTILIZING LIGHT MODULATION FOR THE TRANSFER OF INFORMATION FROM ONE POTENTIAL LEVEL TO ANOTHER AND DEVICE FOR THE APPLICATION OF THIS METHOD

Weli H. J. Damen, Tampere, Finland, assignor to Oy Nokia ab, Helsinki, Finland

Filed Feb. 10, 1969, Ser. No. 798,068
Claims priority, application Finland, Feb. 12, 1968, 363/68
Int. Cl. H04b *9/00*
U.S. Cl. 324—96 **7 Claims**



A method for transferring information optically by means of light, which is time division modulated, in such a way that pulse groups, which are time separated and contain a set number of pulses, are generated at ground potential, converted from series to parallel form, and have information added thereto by selectively removing and leaving pulses in the groups. A subsequent parallel-to-series conversion is effected and the resulting pulse groups are transferred by a light emitting means through an insulating means to light sensitive means where the series of pulses is again converted to parallel form and directed to the appropriate indicating circuit.

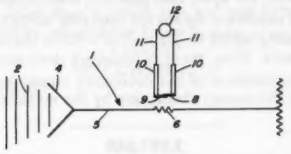
3,597,685

SEMICONDUCTOR ELECTROMAGNETIC RADIATION ISOLATED THERMOCOUPLE

Richard T. Ford, Hampton, N.H.

Filed Apr. 23, 1969, Ser. No. 818,624
Int. Cl. G01r *5/26, 21/04*
U.S. Cl. 324—106 **5 Claims**

To measure the intensity of an electromagnetic field a thermocouple is connected to a meter and placed adjacent a small resistance in a line carrying current induced by the electromagnetic field. This current produces heat in the resistor which is sensed and converted into a DC voltage by the thermocouple. This DC voltage causes the meter to indicate the intensity of the electromagnetic field. To prevent error due to electromagnetically coupled energy heating the thermocouple and/or producing a high frequency current which



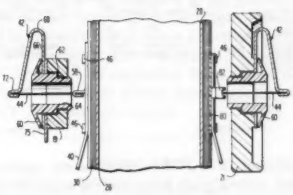
is conducted to the meter circuit from interfering with the meter readings, a physically small thermocouple with semiconductor leads or a semiconductor thermocouple having semiconductor leads is provided.

3,597,686

TAUT BAND SUSPENSION SYSTEM

John F. Kain, Marblehead; Carl F. Van Bennekom, Lynnefield, and William J. Schultz, Lynnfield, all of, Mass., assignors to General Electric Company

Filed May 13, 1969, Ser. No. 824,034
Int. Cl. G01r *1/00*
U.S. Cl. 324—154 R **9 Claims**



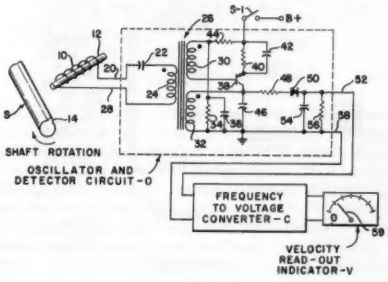
A taut band suspension system for an electrical measuring instrument including a taut band, an inner band anchor connected to an armature assembly and an outer band anchor connected to a frame member. The taut band is "welded" to tab portions formed integrally on each band anchor and located along the axis of rotation of the armature assembly. The taut band is thus welded along a portion of its length and directly along the axis of rotation of the armature assembly which it rotatably supports.

3,597,687

APPARATUS AND METHOD FOR MEASURING VARIATIONS IN THE ABSORPTION OF ENERGY

William H. Seipp, Davenport, Iowa, assignor to Gulf & Western Industries, New York, N.Y.

Filed June 20, 1969, Ser. No. 835,041
Int. Cl. G01p *3/48*
U.S. Cl. 324—173 **2 Claims**



There is disclosed an apparatus and method for measuring the variations in the absorption of energy by a metallic ob-

ject, wherein the apparatus includes a rod of a material which exhibits the characteristic of concentrating a variable magnetic flux, such as for example ferrite, forming a variable airgap with the metallic object, a coil of wire positioned around the rod, for upon energization, transmitting energy to the rod, and oscillator means for applying energy in the form of an oscillating signal to the coil of wire to thereby energize the coil of wire. Also, there is provided detection means for detecting modulations of the oscillating signal resulting from variations in the energy absorption by the metallic object.

3,597,688

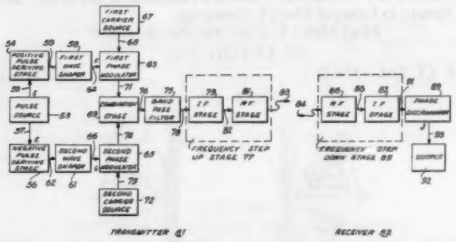
PCM TRANSMISSION SYSTEM UTILIZING ANALOG PHASE DISCRIMINATOR FOR BINARY CODE SIGNALS

Masaka Ogi, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of application Ser. No. 603,386, Dec. 20, 1966, now abandoned. This applicati Mar. 3, 1970, Ser. No. 016,148

Int. Cl. H04l *27/18*

U.S. Cl. 325—30 **2 Claims**



The transmitter of a PCM transmission system for transmitting binary code signals comprises a wave shaper for shaping binary pulses into a rectangular wave pulse train having positive pulses each having a pulse duration equal to the period from the leading edge of a corresponding one of the binary pulses coincident with the leading edge of the corresponding positive pulse to the leading edge of the next succeeding one of the binary pulses. A phase modulator phase modulates a carrier wave with the rectangular wave pulse train provided by the wave shaper to provide a phase shifted carrier which is then transmitted via wireless.

3,597,689

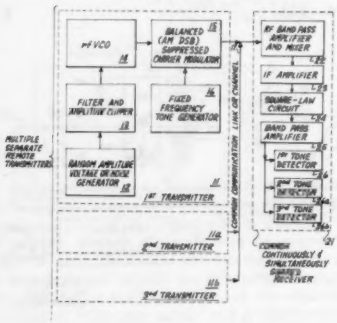
COMMUNICATION SYSTEM

Philip J. Ferrell, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 14, 1966, Ser. No. 594,244

Int. Cl. H04b *1/100*

U.S. Cl. 325—51 **1 Claim**



This invention relates to communication systems and more particularly to a communication system wherein a plurality of separate information transmitters can simultaneously transmit information through a common, relatively small bandwidth communication channel to a single commonly-and-continuously shared receiver.

3,597,690

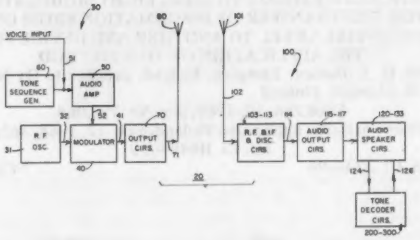
TONE CONTROL CIRCUIT HAVING A FREQUENCY-CONTROLLABLE FILTER

Keith H. Wycoff, P. O. Box 308, Lexington, Nebr.

Filed Sept. 11, 1967, Ser. No. 666,645

Int. Cl. H04b *1/04, 1/26*

U.S. Cl. 325—64 **40 Claims**



A tone control circuit is in a receiver adapted to respond to a sequence of control tones alternately selected from a first group of tones in a first band of frequencies and a second group of tones in a second band of frequencies, wherein the two bands are separated by an intermediate band and wherein the time duration of the gap between adjacent tones in the sequence of tones is substantially zero, the tone control circuit including a filter device which is tuned to the frequencies of the control tones as they are received, a plurality of AND circuits corresponding in number to the control tones and respectively having one input coupled to the filter device and another input coupled to the preceding AND circuit so that each AND circuit is operative to produce an output only in the presence of a tone being passed by the filter and an output signal from the preceding AND circuit, the filter device being tuneable either manually or electronically via the outlet signals from the AND circuits.

3,597,691

RADIO TRANSMITTER ANTENNAE COMPRISING A PLURALITY OF OPEN-ENDED COAXIAL CAVITIES AND MEANS FOR EXITING THEM WITH PULSED ELECTRON BEAMS

Harold Kilner Robin, 17 Broadwater Down, Tunbridge Wells, Kent, and Francis Michael Russell, Abingdon, Berkshire, both of, England

Filed June 19, 1968, Ser. No. 738,335

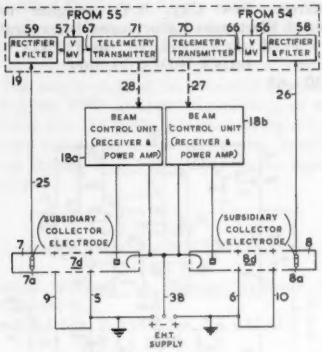
Claims priority, application Great Britain, June 19, 1967, 28180/67

Int. Cl. H04b *1/04*

U.S. Cl. 325—120 **13 Claims**

A radio antenna suitable for the transmission of high-power signals in the medium and high radiofrequency ranges, includes at least one electromagnetically resonant cavity, each cavity being excited by at least one pulsed electron beam which interacts with the cavity and generates radiofrequency oscillations within it. A radiator element is

mounted on and directly connected to the cavity. Embodiments comprising two cavities and modulation apparatus, for



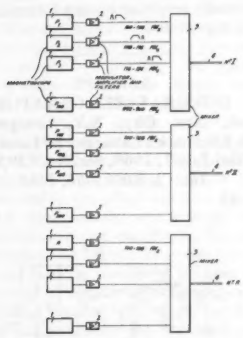
modulating the signals transmitted by controlling the relative phases of the electron beam pulses, are described.

3,597,692

PROCESS AND APPARATUS FOR THE SELECTIVE TRANSMISSION OF IMAGES BY TELEVISION SET

Pierre Fannoy, Avenue du Manoir 3, Rhode-St.-Genese, Belgium

Filed Feb. 10, 1969, Ser. No. 797,838
Claims priority, application Belgium, Nov. 29, 1968, 48550
Int. Cl. H04b *3/02*; **H04n** *7/10, 7/18*
U.S. Cl. 325—308 **6 Claims**



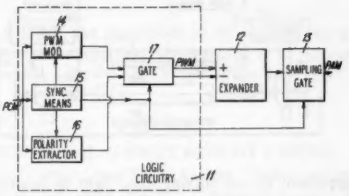
Process and apparatus for the selective transmission of images by ordinary commercial television set, characterized in that it substantially comprises recording program carriers; also recording on said program carriers at least one track for code signals; combining with said program carriers, means for selecting them, running and rewinding them respectively; interpolating between said program carriers and each commercial television receiver; a converter-selector operable by the interested person; coordinating said program carriers and said converter-selectors such that after transmission said program carriers are returned to the ready position and that in addition, in the event that a program selected by the interested person is not free, said person receives an occupied signal.

3,597,693

NONLINEAR DECODER

Joseph Hood McNeilly, Harlow, Essex, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 1, 1968, Ser. No. 709,617
Claims priority, application Great Britain, Mar. 28, 1967, 13952/67
Int. Cl. H03k *13/16*
U.S. Cl. 325—321 **10 Claims**



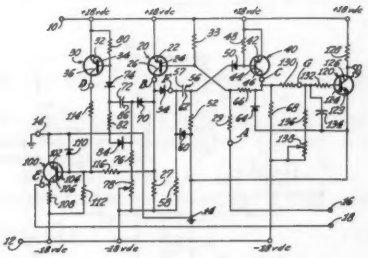
A decoder having a sinh expansion characteristic rather than the normal logarithmic characteristic is described. The code input is converted to a pulse width modulated (PWM) signal of either positive or negative polarity, as indicated by the condition of the most significant digit, having a width t proportional to the numerical value represented by the code input. The PWM signal then controls the charging of a capacitor for time t. The capacitor then is discharged from time t to a fixed time T at which time the capacitor is sampled to provide the decoder output.

3,597,694

FM DEMODULATOR SYSTEM FOR FACSIMILE TRANSMISSION

Paul J. Crane, Torrance, Calif., assignor to The Magnavox Company

Division of Ser. No. 535,442, Mar. 18, 1966, Patent No. 3,467,772.
Filed Dec. 12, 1968, Ser. No. 798,541
Int. Cl. H03d *3/04*
U.S. Cl. 329—126 **9 Claims**

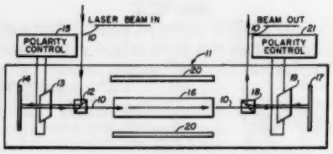


This invention relates to a facsimile system which converts an image into frequency-modulated signals representing the image and transmits the signals to a receiver which demodulates the signals to recover the image. The system includes a demodulator which converts the frequency-modulated signals to signals having substantially no duration in representation of white color and having a progressively increasing duration in progressively increasing shades of color toward black. The demodulator further has characteristics of producing a reference voltage for a white color and of producing progressive variations from the reference voltage for progressive variations toward a black color. By providing the demodulator with these characteristics, an accurate reproduction of the image at the receiver is obtained.

3,597,695
SINGLE-CAVITY REGENERATIVE LASER PULSE AMPLIFIER

James E. Swain; Lloyd L. Steinmetz, and Frank Rainer, all of Livermore, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 23, 1969, Ser. No. 827,255
Int. Cl. H01s 3/00
U.S. Cl. 330—4.3 10 Claims

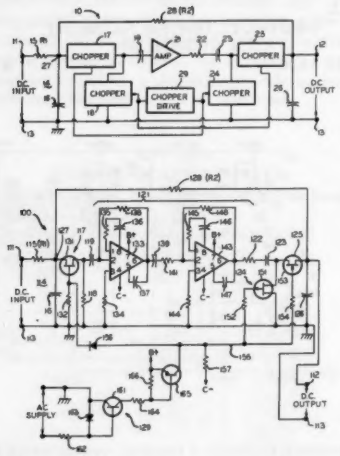


An apparatus for amplifying laser light by multiple passes through a lasing material in a single laser cavity. A single amplifier stage now achieves what has been previously accomplished by several stages. This is accomplished by a switching mechanism which directs a laser beam into and out of the cavity at selected time intervals, thereby enabling amplification of low intensity laser pulses having a time width anywhere in the range of picoseconds to nanoseconds, to energy levels near the damage limit of the optical components of the system.

3,597,696
STABLE HIGH-GAIN SOLID STATE DC AMPLIFIER

Karavattuveetil George Rabindran, Evanston, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Sept. 11, 1969, Ser. No. 856,984
Int. Cl. H03f 3/38; H03g 3/16
U.S. Cl. 330—10 7 Claims

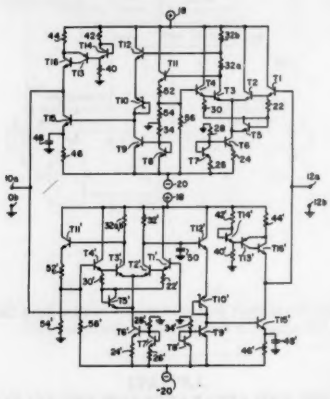


A stable high-gain solid-state DC amplifier circuit comprising a low-pass filter connecting a DC supply to an input chopper (either shunt or series connected) that is AC coupled to a high-gain noninverting AC amplifier; the amplifier is in turn AC coupled to an output chopper (again, either series or shunt connected) connected to a storage capacitor, with a negative feedback circuit from the storage capacitor back to the low-pass filter in the input of the input chopper. The two choppers are driven in effective phase opposition, relative to each other, so that the feedback loop is not completely closed at any instant. For improved gain, the combination of a series chopper and a shunt chopper may be used at either end, or at both ends, of the amplifier circuit.

3,597,697
INTEGRATABLE GYRATOR

John Matarese, New City, N.Y., assignor to General Telephone & Electronics Laboratories, Incorporated

Filed July 7, 1969, Ser. No. 839,221
Int. Cl. H03f 9/00, 3/04
U.S. Cl. 330—63 7 Claims

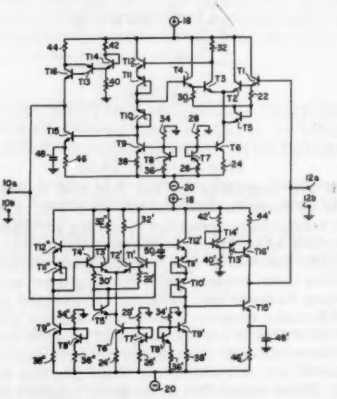


A two-port gyrator circuit which can be manufactured by standard silicon monolithic techniques, is capable of simulating an inductor with a high Q-factor at frequencies ranging from DC to 100 kHz. without compensation, and has low operating voltage and power dissipation requirements. The gyrator circuit is similar to that disclosed in application Ser. No. 839,036, except that the dual power supplies have magnitudes of 6 volts rather than 12 volts. To achieve maximum dynamic range with DC stages and yet to retain the advantages of the gyrator disclosed in application Ser. No. 839,036, a different amplifier having internal gain and external attenuation is provided.

3,597,698
INTEGRATABLE GYRATOR

John Matarese, New City, N.Y., assignor to General Telephone & Electronics Laboratories Incorporated

Filed July 7, 1969, Ser. No. 839,036
Int. Cl. H03f 9/00, 3/04
U.S. Cl. 330—63 8 Claims



A two-port gyrator circuit which can be manufactured by standard silicon monolithic techniques, and which neverthe-

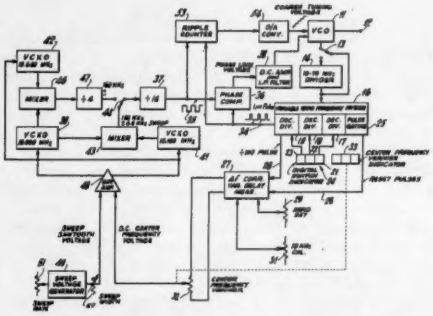
less is capable of simulating an inductor with a high Q-factor at frequencies ranging from DC to 100 kHz. without compensation. With compensation, the gyrator does not become unstable at frequencies as high as 1 MHz. The gyrator is also insensitive to temperature changes and has a large dynamic range. The improved characteristics are achieved with the use of a modified Darlington pair at each port, the low-current performance of each pair being improved without requiring the use of large resistors. Each of the two voltage-to-current converters includes a difference amplifier with feedback. The output stage of the converter is a complementary pair with the PNP transistor functioning as a constant current source and the NPN transistor being driven in accordance with the output of the difference amplifier. This requires level shifting but greatly improves the high frequency performance.

3,597,699

PHASE-LOCKED SWEEP AND CONTINUOUS WAVE GENERATOR

Arnold J. Seipel, Wyckoff, N.J., assignor to Ohmega Laboratories, Pine Brook, N.J.

Filed Apr. 2, 1969, Ser. No. 812,665
Int. Cl. H03b *3/04*
U.S. Cl. 331—18 **4 Claims**



As in existing frequency synthesizers, the frequency of a main tunable oscillator is controlled by being phase locked to a voltage obtained by comparing a pulse signal of comparable frequency derived by dividing the oscillator signal frequency by the necessary divisor. Binary-coded decimal switches set the divisor in steps equal to the standard frequency. A central feature of the present invention is a calibrated potentiometer supplied with a voltage that is inversely proportional to the frequency of the main oscillator and is of such a magnitude that moving the arm of the potentiometer from one end to the other will vary the frequency of the main oscillator continuously over a range which is equal to the difference between two successive frequencies determined by the switches, no matter what the frequency of the main oscillator may be. The voltage at the arm of the potentiometer is connected to the standard-frequency generator to modify its frequency a certain percentage, and a sweep signal may also be applied to sweep the standard signal over a limited band and thus sweep the signal of the main oscillator over a controlled band while still retaining a phase-locked condition.

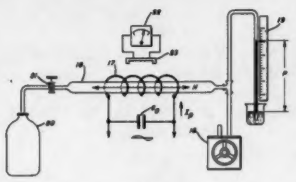
3,597,700

HIGH ENERGY GAS LASER PRODUCING A CONTINUOUS ABNORMAL GLOW DISCHARGE IN THE GAS MIXTURE

Auguste Louis Marie Antoine Rouy, 142 Edgemont Road, Scarsdale, N.Y.

Continuation of application Ser. No. 289,626, June 21, 1963, now abandoned. This application Aug. 22, 1968, Ser. No. 755,516
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 **5 Claims**

An energizing coil encircles a tubular light-resonating cavity containing a gas mixture, the pressure of the gas mixture and the ratio of the cavity inside diameter to the coil diameter having predetermined values. A high frequency voltage is



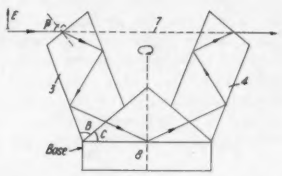
applied to the coil, the magnitude of the voltage being such as to produce and maintain an abnormal glow of the gas mixture substantially over the axial length of the coil.

3,597,701

MECHANICAL Q-SWITCHING OF LASERS

Jean Eugene Martial Cornillault, Antony, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 13, 1969, Ser. No. 799,029
Claims priority, application France, Feb. 20, 1968, 140478
Int. Cl. H01s *3/11, 3/02*
U.S. Cl. 331—94.5 **5 Claims**



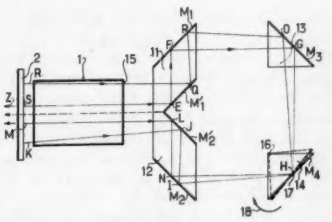
Apparatus for improving the Q-switching of a laser beam wherein a critical transmission prism is placed in the Fabry-Perot interferometric cavity. In one embodiment, two Lummer-Gehrke plates are joined by their end faces in a V-shape to form said critical transmission prism having an aligned input and output. In a second embodiment, two Lummer-Gehrke plates are joined to a prism to form said critical transmission prism having an aligned input and output.

3,597,702

METHOD AND APPARATUS FOR TRIGGERING A SOLID LASER

Roger Dumanchin, Orsay, and Jean-Pierre Bettini, Saint Gratien, both of, France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Mar. 5, 1969, Ser. No. 804,574
Claims priority, application France, Mar. 6, 1968, 142 631
Int. Cl. H01s *3/05*
U.S. Cl. 331—94.5 **4 Claims**



A process for triggering a laser of a solid bar of active material, consisting of separating the rays emitted from the

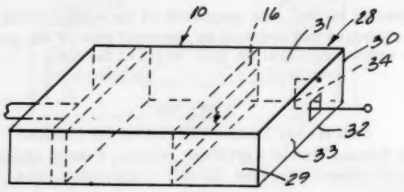
bar into two beams and rotating each of the beams in opposite directions so as to render them parallel with the optical axis of the cavity at the same time.

3,597,703

IMPATT DIODE OSCILLATORS

Robert A. Lebowitz, Brooklyn, N.Y., assignor to PRD Electronics, Inc., Westbury, L.I., N.Y.

Filed Nov. 29, 1968, Ser. No. 779,774
Int. Cl. H03b *7/06*
U.S. Cl. 331—107 R **1 Claim**



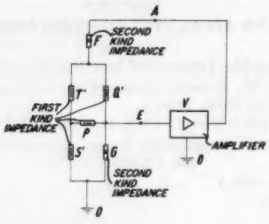
A microwave frequency oscillator using an impatt diode in conjunction with a waveguide cavity to provide wideband tunability at high frequencies. An impatt or similar type solid-state device is embedded within a slit which is formed in an end wall of a circular or rectangular waveguide. The waveguide cavity has an effective length which is a multiple of one-half of the wavelength at the center frequency. A quarter wavelength cavity is then coupled to the wall of the half wavelength cavity having the impatt diode. In this way wideband tunability is achieved and an output signal is developed which has a substantially reduced noise content.

3,597,704

RC BRIDGE VARIABLE FREQUENCY SINUSOIDAL OSCILLATOR

Heinz Steinger, Langenthal, Switzerland, assignor to Hasler, AG, Bern, Switzerland

Filed July 14, 1969, Ser. No. 841,523
Claims priority, application Switzerland, July 17, 1968, 10390/68
Int. Cl. H03b *5/26*
U.S. Cl. 331—140 **8 Claims**



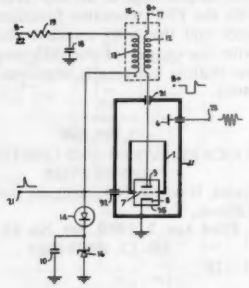
A sinusoidal wave generator comprises an amplifier operating with feedback through an RC bridge network having a first and a second loop. One pole of the first loop is connected through a resistor or capacitor to one pole of the amplifier; the other two poles, being common to both loops, are connected together by a circuit element which may be a single-pole circuit breaker or a variable impedance. One pole of the circuit element is connected to a second pole of the amplifier. The aforesaid pole on the first loop is connected to the common poles by capacitors or resistors. One of the common poles is also connected to a pole on the second loop by a resistor and the other common pole to said pole by a capacitor.

3,597,705

SELF-MODULATING PULSED RF OSCILLATOR

Frank Weiss, Washington, D.C., and Fabian T. Liss, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 30, 1963, Ser. No. 312,791
Int. Cl. H03b *11/08*
U.S. Cl. 331—166 **10 Claims**



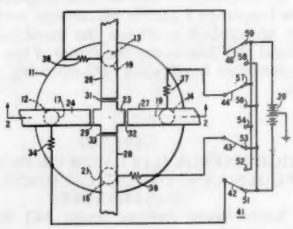
1. A self-modulating source of radio frequency pulses comprising: a resonant cavity; a microwave tube comprising a plate, a grid and a cathode, said microwave tube being connected in said resonant cavity to form a radio frequency oscillator that produces radio frequency energy in said resonant cavity when said microwave tube conducts, the frequency of oscillation of said radio frequency oscillator being determined by the dimensions of said resonant cavity; an output terminal located externally of said resonant cavity; radio frequency energy probe means disposed within said cavity and connected to said output terminal for coupling radio frequency energy generated in said resonant cavity by the conduction of said microwave tube to said output terminal; and blocking oscillator feedback circuit means connected between said plate and said grid of said microwave tube and isolated from the radio frequency energy generated in said resonant cavity when said microwave tube conducts for applying a positive voltage to said grid upon initiation of conduction of said microwave tube and for applying a negative voltage to said grid after the plate current of said microwave tube reaches its maximum value.

3,597,706

STRIP LINE SWITCH

Lynden U. Kibler, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 1, 1969, Ser. No. 862,771
Int. Cl. H01p *5/12*
U.S. Cl. 333—7 **3 Claims**

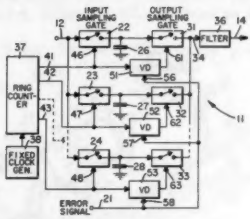


A switch for high frequency use is an integrated strip line structure wherein diodes are in shunt between the source and load and can be selectively biased to produce switching with a minimum of impedance mismatching.

3,597,707
VARIABLE SAMPLE PERIODIC HOLD ELECTRONIC DELAY NETWORK

Sidney S. C. Chao, Palo Alto, and Donald E. Morgan, Saratoga, both of, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Sept. 2, 1969, Ser. No. 854,625
Int. Cl. H03h 7/36; H04b 3/04
U.S. Cl. 333—18 4 Claims

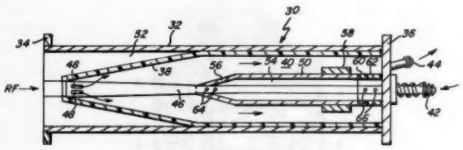


To achieve a variable time delay of an information signal wherein the amount of delay can be continuously varied in response to a control signal, a plurality of paralleled sample and hold networks are arranged to receive the information signal and perform the following operations thereon. First, the magnitude of the information signal is sequentially sampled by a plurality of separate sampling gates, wherein each gate is provided with a separate storage capacitor for holding the sampled magnitude for the time interval between successive operations of the associated gate. The stored signal magnitudes are in turn sampled in succession by a plurality of separate output sampling gates wherein the resulting output signals therefrom are fed to a low-pass filter for eliminating high frequency signal components introduced by operation of the sampling gates. As the time duration between successive operations of the input and output sampling gates determines the amount of delay introduced into the information signal, a plurality of voltage controlled delay means are connected between associated sampling gates and are responsive to the instantaneous amplitude of the control signal to provide continuous adjustment of the gate-timing intervals.

3,597,708
BROADBAND RADIO FREQUENCY TRANSMISSION LINE TERMINATION

Henry W. Perreault, Chelmsford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 31, 1969, Ser. No. 889,393
Int. Cl. H01p 1/24
U.S. Cl. 333—22 R 12 Claims

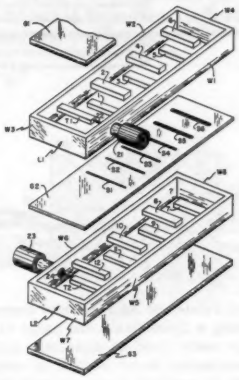


An electromagnetic energy termination device is provided with power absorbing means in a structure having plural reentrant electrical paths in series defined by concentric coaxial conductors within a substantially reduced mechanical configuration. Movement of a fluid dielectric medium within a fluidtight chamber is provided either in parallel or serially along the electrical paths to absorb high average and peak powers at ultrahigh radio frequencies over relatively wide bandwidths.

3,597,709
FILTER HAVING DIRECT AND CROSS-COUPLED RESONATORS

John David Rhodes, Natick, Mass., assignor to Microwave Development Laboratories, Inc., Needham Heights, Mass.

Filed Mar. 24, 1969, Ser. No. 809,674
Int. Cl. H01p 1/20
U.S. Cl. 333—73 R 5 Claims

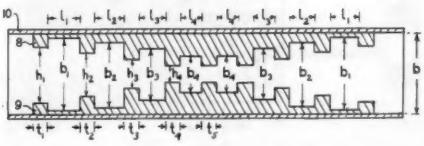


A band-pass filter is constructed from arrays of resonant elements which are coupled in a manner enabling control to be simultaneously effected over the filter's amplitude and group delay characteristics. In each array the resonators are directly coupled in consecutive order and the resonators in one array are cross coupled to resonators in the other array. The direct and cross-coupled arrangement of resonators is in accordance with a mathematical relationship which permits selection of the filter's group delay characteristic and the filter's amplitude characteristic. In accordance with that relationship, multiple paths of different lengths are provided for the wave energy travelling from the input to the output.

3,597,710
APERIODIC TAPERED CORRUGATED WAVEGUIDE FILTER

Ralph Levy, Newton, Mass., assignor to Microwave Development Laboratories, Inc., Needham Heights, Mass.

Filed Nov. 28, 1969, Ser. No. 880,556
Int. Cl. H03h 7/10
U.S. Cl. 333—73 R 4 Claims

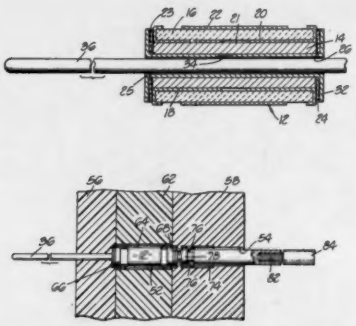


A waveguide band-pass filter utilizes a sequence of capacitive irises to form corrugations within the rectangular waveguide. The capacitive irises are aperiodically spaced along the guide and the capacitance of consecutive irises in the sequence are of different values. The waveguide has its height tapering in steps and each capacitive iris in the sequence is situated between waveguide sections of different heights.

3,597,711
REMOVABLE ELECTRICAL CONNECTOR FILTER

Joseph W. Buckley, Sepulveda, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 23, 1969, Ser. No. 793,264
Int. Cl. H03h 7/14
U.S. Cl. 333—79 2 Claims

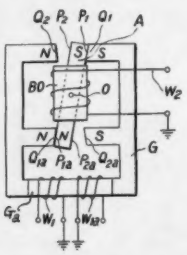


The disclosure relates to an electrical connector filter assembly comprising a cylindrical core made of ferromagnetic material and an outer core of dielectric material which is coated by a conductive layer. A pair of conductive spring members having an opening approximately the same as that of the ferromagnetic core are placed at either end of the two core members. A conductive tube having a flange at one end thereof which abuts one of the spring members is inserted through the spring members and the ferromagnetic core and the other end of the tube is then formed against the other spring member. A plurality of inwardly extending tines are formed along the conductive tube for contacting a terminal member which can be inserted through the tube. The assembly provides a removable pi-filter.

3,597,712
SWITCH ELEMENT

Yukio Nakagome, Tokyo; Hiroichi Teramura, Tokyo; Yasuo Fukata, Tokyo, and Sumitoshi Ando, Ohmiya, all of, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 9, 1970, Ser. No. 9,560
Claims priority, application Japan, Feb. 10, 1969, 44/9251
Int. Cl. H01h 51/27
U.S. Cl. 335—151 8 Claims

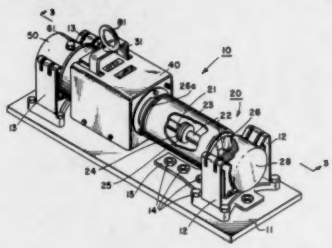


A switch element having at least one pair of contacts to be switched-on and switched-off states, where the switch-on and the switch-off are controlled in accordance with only the attractive force or the repelling force acting between magnetic poles produced on each of two magnets which form the switch element, without the use of the internal stress of the arm of each of the contacts, and in which each the switched-on state and the switched-off state of the switch element is self-held by utilizing the residual flux density in a magnetic circuit including said pair of contacts.

3,597,713
CURRENT RESPONSIVE CIRCUIT BREAKER WITH RELEASABLE COUPLING MEANS, AND WITH CIRCUITRY MEANS DISPOSED WITHIN A HOLLOW TERMINAL

James E. McClain, and Argus F. Parks, both of Greenville, Tex., assignors to Esco Manufacturing Company, Greenville, Tex.

Filed Jan. 3, 1969, Ser. No. 788,773
Int. Cl. H01h 73/38, 33/66, 73/20
U.S. Cl. 335—171 10 Claims

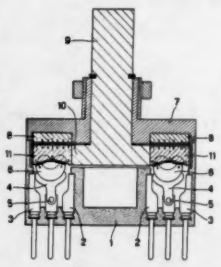


Disclosed is circuit interrupting apparatus having a pair of remotely spaced conductive terminals for insertion into a line or circuit which is to be protected from overload or fault current. One of the coaxially disposed reciprocatively mounted contact carrier rods adapted to engage and disengage within a substantially evacuated chamber is coupled to spring actuated means and is tripped open by action of a solenoid plunger actuated by an output signal from relay circuitry disposed within one of the remotely spaced conductive terminals. Opening and closing springs respectively retract and advance the movable contact carrier rod, the compression of these springs being effected by latch means which, upon release, retracts the carrier rod from engagement. One of the embodiments discloses a separate trip-free actuating mechanism which cocks the apparatus by advantageous action of a rotatable shaft, linkage mechanism, camming arrangement, and respective collars coupled to the opening and closing springs.

3,597,714
MAGNETIC ROTARY SWITCH

Federico Visconti Brebbia, and Giorgio Visconti Brebbia, both of Milan, Italy, assignors to Aliprando Visconti Brebbia, Milan, Italy

Filed Apr. 15, 1970, Ser. No. 28,861
Claims priority, application Italy, Feb. 12, 1970, 20522A/70
Int. Cl. H01h 5/02, 19/60
U.S. Cl. 335—207 3 Claims



Snap acting magnetic rotary switch having a plurality of switches, each of which comprising two fixed contacts and one movable contact, a permanent magnet being fast with the latter. The switch also comprises two annularly shaped permanent magnets adjacent each other and the magnets fast with said movable contacts, the annular magnet outwardly positioned being fixed and having as many pairs of poles as the switches and as many pairs of poles being provided on the adjacent surface of the intermediate annular magnet

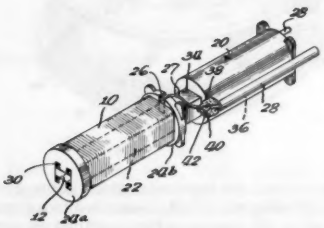
which is fast with a rotary shaft. On the surface of the intermediate annular magnet facing the magnets fast with the movable contacts three ring-shaped poles are provided, the sign of which being alternately different; one of these poles is interrupted at a location and the other two poles are deformed to this location. Upon rotation of said shaft, the switch contacts are snap opened or closed with a speed independent of the speed of rotation of said shaft.

3,597,715

FIXTURE FOR ELECTRICAL SENSING APPARATUS

Dhu Aine J. Davis, Wheaton, Ill., assignor to Hermetic Coil Co., Inc.

Filed Apr. 18, 1969, Ser. No. 817,445
Int. Cl. H01f 27/02
U.S. Cl. 336—96 10 Claims



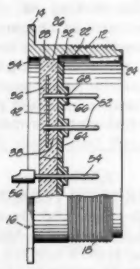
A unitary fixture for an electrical sensing apparatus which includes a coil, a core and a magnet for creating a magnetic flux to sense the presence of an object of conductive material. The fixture includes a bobbin portion having a coil receiving central portion which encases the core and holds the core axially within the coil. A housing portion is formed integral with the bobbin portion at one end thereof and encases the magnet and holds the magnet coaxially with the coil at one end of the bobbin portion. The bobbin portion has an end wall at the inner end thereof with openings through which end wires from the coil extend for connection to appropriate terminal leads. The housing portion has grooves for receiving and positioning the terminal leads for connection with the end wires and a portion of the housing is made of plastic whereby the end wires and terminal leads are affixed thereto by heat sealing as the end wires are soldered to the terminal leads.

3,597,716

HERMETICALLY SEALED CONNECTOR

Ross M. Stuart, Glendale, Calif.; George E. Durst, Orange, Calif., and Francis H. Ingham, Scottsdale, Ariz., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 29, 1969, Ser. No. 829,071
Int. Cl. H01r 31/08
U.S. Cl. 339—19 1 Claim



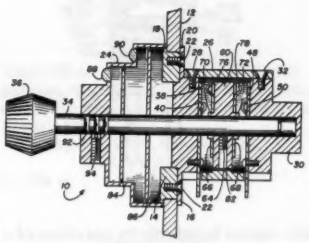
The disclosure relates to a hermetically sealed electrical connector which is formed of a plurality of contacts which are interconnected by means of a conductive plate. The contacts are connected to the conductive plate and a pair of sealing members which are made of a vitreous material, placed on either side of the conductive plate. The arrangement is mounted in a connector shell and fired so that the sealing members are fused around the conductive plate and to the shell forming a hermetic seal. Contacts which are not connected to the conductive plate may also be sealed to the sealing members. The resultant device provides a hermetically sealed connector having sufficient rigidity and resistance to prevent unwanted physical contact between the members mounted within the connector shell.

3,597,717

DUAL POTENTIOMETER

Harry William Kent, 918 Briar Way, Garland, Tex.

Filed Nov. 24, 1969, Ser. No. 879,271
Int. Cl. H01c 9/00
U.S. Cl. 338—131 13 Claims



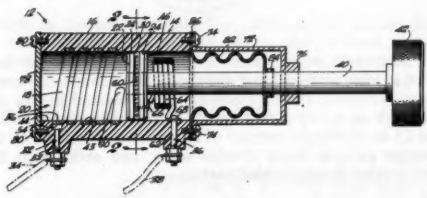
A dual potentiometer is operable by manipulation of a single shaft; two stationary resistive elements presenting annular tracks are axially spaced adjacent the shaft, and a contact hub is fixed on the shaft between the resistive elements with a pair of brushes for slidably contacting the elements; the shaft may be reciprocated to place a brush in contact with either of the elements, or to open circuit both potentiometers, and the shaft may be rotated to adjust the potentiometers; each of two indicator discs on the shaft is marked with appropriate calibrations for one of the potentiometers, and each is viewed through a lens having a focal length such that the disc is in focus when viewed through the lens when the shaft is in operating position for the potentiometer to which it relates.

3,597,718

VARIABLE RESISTOR MEANS

James W. Gibbs, 8027 W. 14th Avenue, and John L. Gibbs, 14820 Miami Lakeway East, both of Hialeah, Fla.

Filed Mar. 23, 1970, Ser. No. 21,794
Int. Cl. H01c 9/00
U.S. Cl. 338—156 10 Claims



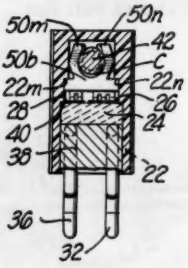
A variable resistor unit particularly useful in selectively controlling current in a circuit of low or medium voltage, a preferred form of the invention includes a smooth bore resistance coil having a helical wire contact element convolutely arranged in the bore of the resistance coil structure of the device. A ring of metallic mercury fluid is concentrically arranged in the bore of the resistance coil and defines adjustable contact means engaging the contact areas of the helical coil element. Selective axial manipulation of the mercury

ring in the bore of the resistance coil operatively increases or decreases the resistance in the circuit of the resistor device.

3,597,719
VARIABLE RESISTOR WITH CLUTCH LIMBS LIFTING SLIDER AGAINST HOUSING GUIDES

Henry F. Martin, Banning, and Joseph R. De Rouen, Rialto, both of, Calif., assignors to Bourns, Inc.

Filed Nov. 28, 1969, Ser. No. 880,672
Int. Cl. H01c *9/02*
U.S. Cl. 338—180 **7 Claims**

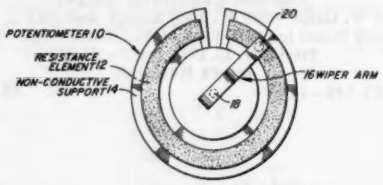


A variable resistor adjustable by operation of a lead screw, with a post or slider having opposed upstanding elongate internally serrated limbs devised to grip the lead screw at opposed regions above the lead screw axis and thereby tend to lift the post, the latter having laterally extending elongate wings whose upper surfaces are lifted into engagement with guiding surfaces on the resistor housing, and the slider carrying a snap-on demountable contact.

3,597,720
WIPER ARM AND POTENTIOMETER COMPRISING THE SAME

Lester E. Burgess, Roslyn, Pa., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Sept. 5, 1969, Ser. No. 855,481
Int. Cl. H01c *1/12*
U.S. Cl. 338—202 **10 Claims**



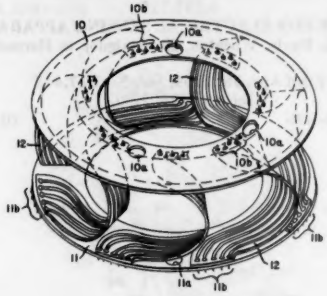
An improved wiper arm for a potentiometer having bonded at least to the wiping end thereof, an electrically conductive, synthetic, resinous polymerizate, formed in situ by curing with an epoxy curing agent, a composition containing about 25 to 40 weight percent of an epoxy resin, about 40 to 70 weight percent finely divided silver, and about 5 to 20 weight percent finely divided carbon.

3,597,721
MULTICIRCUIT ROTARY ELECTRICAL CONNECTOR

Joseph P. Mangan, Whitestone, N.Y., assignor to Aeroflex Laboratories Incorporated

Filed Sept. 29, 1969, Ser. No. 861,596
Int. Cl. H01r *39/00*
U.S. Cl. 339—5 **4 Claims**

A unitary multicircuit rotary electrical connector comprises a pair of terminal boards of insulation material in the form of substantially parallel spaced discs and means for mounting the boards for relative rotation, each of the boards having a plurality of spaced contact terminals arranged approximately in a circle with the groups of contact terminals of one of the boards at a greater radius than those of the other of the boards. The connector further comprises a plurality of flat flexible multiconductor ribbons preformed approximately in annular form and terminating at each end in a plurality of terminal contacts spaced to register with a group

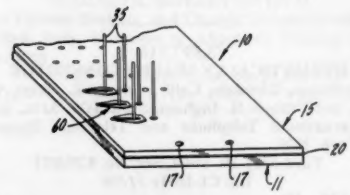


of contact terminals, the terminal contacts at one end of each of the ribbons being electrically connected to a group of terminals of one of the boards and the terminal contacts at the other end thereof being electrically connected to a group of terminals of the other of the boards and each ribbon being of a length to form an U-shaped loop between the boards, the ribbons being substantially equally spaced about the axis of rotation.

3,597,722
CONNECTOR

George Walter, Chicago, Ill., assignor to Malco Manufacturing Company, Inc., Chicago, Ill.

Division of Ser. No. 667,245, Sept. 12, 1967, Pat. No. 3,496,517.
Filed Oct. 13, 1969, Ser. No. 865,775
Int. Cl. A44b *21/00*; **H01r** *9/02*
U.S. Cl. 339—19 **5 Claims**



A connector clip for making an electrical connection between a terminal post and an apertured plate or the like. The clip has resilient parallel legs and bows outwardly to grip the post between them while anchoring itself in the aperture. The plate provides a uniform power source at all terminals to which it is connected and is insulated from a ground plate, which it overlies, and in which the terminals are mounted.

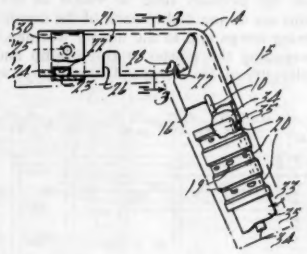
3,597,723
SPARK PLUG TERMINAL

Francis C. Schmidt, Berkley, and David E. Taylor, Mount Clemens, both of, Mich., assignor to Microdot Inc.

Filed May 1, 1970, Ser. No. 33,629
Int. Cl. H01r *13/44*, *15/12*
U.S. Cl. 339—26 **10 Claims**

The terminal is stamped from a thin sheet of metal and rolled into a cylindrical sleeve which is bent at the center to have the adjacent sections disposed at an angle of approximately 110° to each other after the wires of a conductor have been inserted in the end with the two sections retained in an-

gular relation by locking fingers. The terminal is encased in an elastomeric tube before it is bent and the memory therein aids in retaining the terminal sections in locked angular relation.



3,597,724

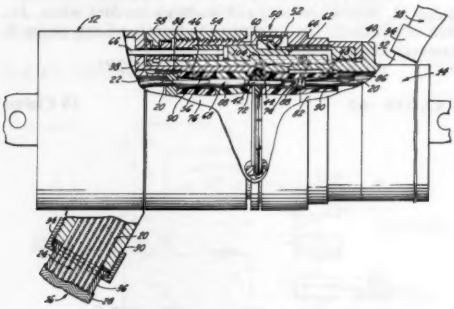
CONNECTOR

John J. Phillips, Rolling Hills, Calif., assignor to G & H Technology, Inc., Santa Monica, Calif.

Continuation of application Ser. No. 606,077, Dec. 30, 1966, now abandoned. This application Sept. 23, 1968, Ser. No. 767,910

Int. Cl. H01r *13/52*

U.S. Cl. 339—94 M **12 Claims**



The electrical connector disclosed herein includes a novel seal for sealing the parts of the connector against dirt and moisture and for insuring an electrically conductive path between the different parts of the connector and the shielding for the cables. The seal includes a center body of resilient, electrically nonconductive material and a resilient metal outer rim which insures an electrically conductive path between the two parts of the housing. When the housings are secured together the resilient material in the seal tends to flow radially outwardly so as to spread the electrically conductive rim against the two parts of the housing whereby the pressure is uniformly distributed throughout all portions of the seal.

3,597,725

ELECTRICAL SOCKET

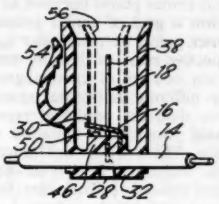
Henry T. Beck, 248 Forest Hill Road, Toronto, Ontario, and Rudolph Koehler, 32 Fleming Drive, Willowdale, Ontario, both of, Canada

Filed May 15, 1969, Ser. No. 824,816

Int. Cl. H01r *9/08*

U.S. Cl. 339—97 L **5 Claims**

An electric lamp socket molded around part of a power cord and having contacts with pointed tips piercing the insulation of the power cord to effect electrical communication therewith. Each contact is provided with a crosspiece constituting a key formation anchoring the contact within the socket material and rendering the contact immovable relative thereto.



3,597,726

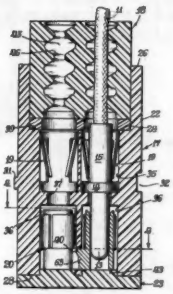
TERMINAL BLOCK CONNECTORS

Arthur I. Appleton, Northbrook, and John L. Rutkowski, Elk Grove, both of, Ill., assignor to said Rutkowski, assignor to Appleton Electric Co.

Filed Apr. 7, 1969, Ser. No. 814,137

Int. Cl. H01r *9/00*

U.S. Cl. 339—198 P **2 Claims**



An improved terminal block assembly including at least one parallel pair of female contacts electrically connected together by a bridge formed integrally therewith. Preferably each of the female contacts include a base portion and a floating portion, and the bridge connects the base portions in an undulating pattern in end view.

3,597,727

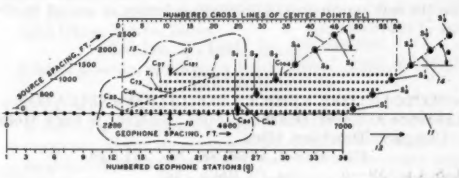
METHOD OF ATTENUATING MULTIPLE SEISMIC SIGNALS IN THE DETERMINATION OF INLINE AND CROSS DIPS EMPLOYING CROSS-STEERED SEISMIC DATA

Roger D. Judson, Houston, Tex.; Robert J. S. Brown, Fullerton, Calif., and Ian R. Malarky, La Habra, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 30, 1968, Ser. No. 787,788

Int. Cl. G01v *1/00*

U.S. Cl. 340—15.5 **24 Claims**



A method for collecting and processing seismic data to determine the attitude of strata below the surface of the

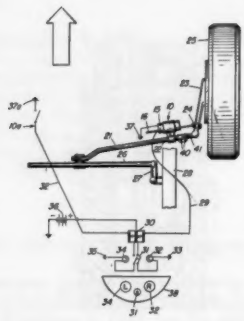
earth. A spread of seismic detectors is employed in conjunction with an array of obliquely aligned seismic sources (oblique with respect to a survey line at the surface of the earth) such that (i) center points between all possible source-detector pairs form a grid of center points having sets of cross-aligned center points perpendicular to the line of survey, yet (ii) respective pairs of detector station-shot points associated with any one set of cross aligned center points have appreciably different horizontal spacings. Multitrace records of seismic data are produced representing energy reflected from said strata after initiation of each seismic source individually. These traces are rearranged and then processed by the technique known as beam steering to produce traces that not only provide directional information as to the emergence angle of the reflected energy from said strata but also significantly attenuate multiple reflected signals present in the original traces.

3,597,728

MEANS OF INSTANTLY DETECTING ANOMALIES ON A MOVING VEHICLE

Anthony D. Kurtz, 901 N.W. 47th St., Lawton, Okla.

Filed June 11, 1968, Ser. No. 736,164
Int. Cl. B60q *1/00*
U.S. Cl. 340—52 **5 Claims**



This application discloses a new method and means for instantly ascertaining any deviation from the normal toe-in, toe-out alignment of any vehicle's front wheels, regardless of make or model, domestic or foreign, all wheel or front-wheel drive. This valuable information is derived from detecting any maladjustment of the specified adjusted angle between the tie rod and the steering arm at the precise point of adjustment and causing an indicator lamp on the instrument panel to light whenever such misalignment occurs.

The device operates by means of a microswitch contact arm having a roller wheel at its free end. When the front wheels are in a straight ahead position and alignment is normal, the roller rides in a groove in an operating rod which is pivotally attached at one end to a fixed pivot mount on a steering arm. If the adjusted angle between the tie rod and the steering arm deviates from its original correct adjustment, the roller is displaced from its groove, forcing the contact arm upwardly to close the normally open microswitch. This in turn lights a lamp on the instrument panel to indicate that the left and/or the right wheel is toeing in or out in excess of specifications.

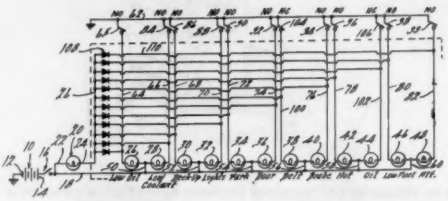
3,597,729

AUTOMOTIVE VEHICLE CONDITION INDICATOR

Lawrence A. Lopez, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 4, 1968, Ser. No. 781,029
Int. Cl. B60q *1/00*
U.S. Cl. 340—52 F **1 Claim**

This disclosure relates to an automotive vehicle condition indicator for warning the vehicle operator when one or more of the conditions relating to vehicle operations are abnormal or are in a certain predetermined state. It comprises a master warning lamp, preferably positioned in the primary field of vision of the vehicle operator, and a plurality of warning or condition indication lamps, one for each vehicle condition, located out of the primary field of vision of the vehicle operator. Means are connected to each of the condition indication or warning lamps and to the master warning lamp for lighting or energizing the master warning lamp and one of more of the plurality of condition indicator lamps when one



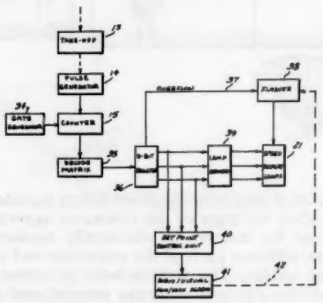
or more of the conditions relating to vehicle operations is abnormal or is in the certain predetermined state. A unilateral conducting means is connected in circuit with the master warning lamp and with each of the condition indication or warning lamps for preventing energizing of the remainder of the vehicle condition indication or warning lamps when one of them is energized. In addition, a means is provided, actuated by the vehicle operator, for proving out the master warning lamp and the vehicle condition indication or warning lamps.

3,597,730

VEHICLE SPEED INDICATOR SYSTEM

Rudolph M. McClellan, Sr., and Rudolph M. McClellan, Jr., both of Houston,, Tex., assignors to Houston Engineering & Research Corp., Houston, Tex.

Filed Dec. 23, 1968, Ser. No. 786,291
Int. Cl. B60q *1/54*
U.S. Cl. 340—62 **19 Claims**



For installation in moving vehicles, apparatus having a preferred form which incorporates an externally visible indicating means preferably seen from highway points forward of, behind, and from above a moving vehicle which indicates speed and acceleration of the vehicle to others remote from the vehicle.

3,597,731

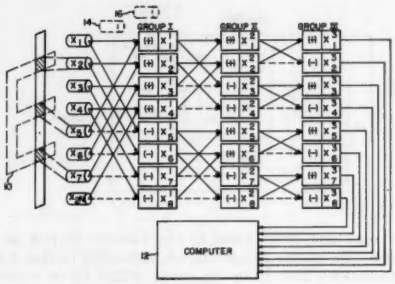
PATTERN RECOGNITION APPARATUS

Heribert J. Reitboeck, Turtle Creek, and Thomas P. Brody, Pittsburgh, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 28, 1969, Ser. No. 845,133
Int. Cl. G06k *9/04*
U.S. Cl. 340—146.3 R **10 Claims**

Described is apparatus, employing a mathematical transform involving addition and differencing only, for recogniz-

ing patterns or characters which can be distorted or misaligned with respect to optical-sensing means without any sacrifice in the accuracy of the device. When executed on a digital computer, the mathematical transform utilized in accordance with the invention needs only a fraction of the computation time needed for transforms utilized by prior art devices. At the same time, it is better able to cope with certain distortions that are characteristic of hand-printed letters and digits such as inclination, small rotation and the like.

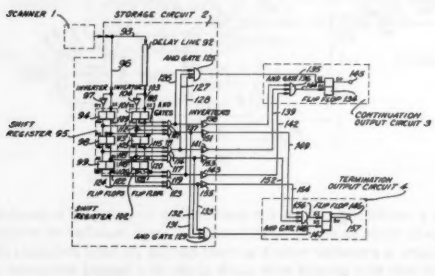


3,597,732

LINE-DETERMINING CIRCUIT FOR PATTERN-INDICATING CIRCUIT

Naoki Morimoto, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 16, 1969, Ser. No. 791,675
Claims priority, application Japan, Jan. 18, 1968, 43/2743
Int. Cl. G06k 9/10
U.S. Cl. 340—146.3 A 9 Claims



A scanner scans a pattern and supplies to a storage circuit scanning signals in accordance with the pattern. The storage circuit determines the complete continuity and the noncontinuity of specific slope components of the lines of the pattern and the complete termination and the nontermination of such components.

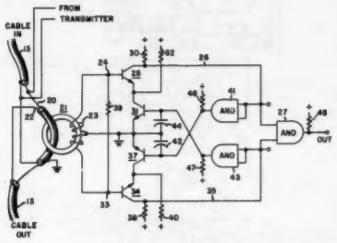
3,597,733

CABLE RECEIVER

Warren R. Foxwell, Park Ridge, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 4, 1970, Ser. No. 8,630
Int. Cl. H04q 9/00
U.S. Cl. 340—147 R 10 Claims

A cable receiver for use in the connection of a central station to a plurality of groups of remote stations with the use of transmitting and receiving apparatus at the central station and at the remote stations to transmit and receive serially coded messages comprising a plurality of bits in binary form. A pulse transformer in series with the cable at each receiver location detects the binary transmission from the central station through one branch or channel of the receiver and detects the binary transmission from a still more remote group of remote stations through another channel of the receiver. When one channel of the receiver is receiving a bit, the other channel is disabled. This disabling is caused to extend slightly beyond the end of transmission of each bit so that the collapsing field of the input transformer occurring at the trailing edge of each transmitted bit does not cause a false signal through the other channel.

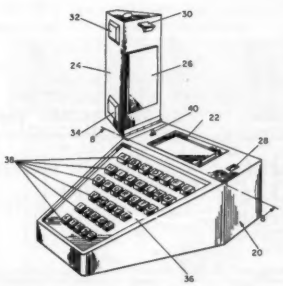


3,597,734

SEQUENTIALLY OPERATED SYSTEM FOR AUTHENTICATING CREDIT CARDS

George A. Harris, Jr., 110 Lincoln Ave., Saddle Brook, N.J.

Filed Oct. 4, 1968, Ser. No. 765,051
Int. Cl. H04g 3/00
U.S. Cl. 340—149 4 Claims



A system for authenticating credit cards wherein the card contains a hidden code and is coded by means of irregularities in the card's surface. The card is inserted in the reader which is provided with a plurality of keys. When the code is punched in the correct order on the keys so that it corresponds with the hidden code contained on the card irregularities, circuits in the reader close and an indication that the card is in the hands of one having knowledge of the hidden code is displayed. This display can be by means of a light or by means of actuation of the print roller contained in the reader or both.

3,597,735

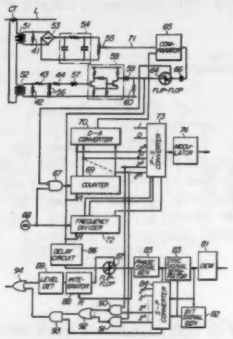
CARRIER PILOT RELAYING SYSTEM

Keizo Nakayama, Hitachi-shi, and Yutaka Ohno, Tokyo, both of, Japan, assignors to Hitachi, Ltd, Tokyo, Japan and Yutaka Ohno, Tokyo, Japan

Filed Jan. 29, 1969, Ser. No. 795,094
Claims priority, application Japan, Feb. 2, 1968, 43/6011
Int. Cl. H02h 3/28, 7/26
U.S. Cl. 340—149 14 Claims

A carrier pilot relaying system in which the current flowing through the power transmission line in each electrical station is detected by a current transformer to be converted into a phase signal and a digital signal representing the magnitude (scalar quantity) of the current, these signals being transmitted from one station to another station in the form of a train of pulse signals. In each station, detection of the phase

difference between the phase signals and detection of the difference between the magnitude of the currents are carried



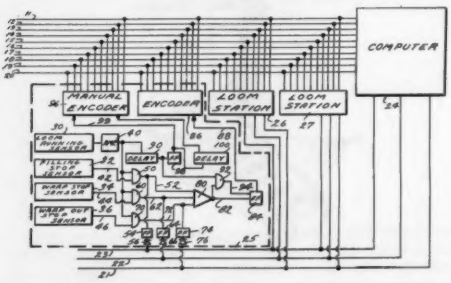
out independently of each other so that a circuit breaker can be tripped when a predetermined condition is satisfied.

3,597,736

PLURAL STATION LOOM DATA COLLECTION SYSTEM

Robert H. Best, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed July 23, 1968, Ser. No. 746,961
Int. Cl. H04g *11/00*
U.S. Cl. 340—163 **12 Claims**



The invention relates to an information-conveying system for communicating conditions on a number of textile machines to a computer or recorder whereby the machines themselves notify the computer or recorder whenever a trigger condition, such as stoppage, occurs and whenever it ends. In one embodiment each of a number of looms encodes its address onto a number of address lines when it stops and communicates the cause of stoppage to the computer or recorder on a number of return lines. Upon restarting the address is once again encoded onto the address lines. A manual encoder can encode an information signal onto the address lines or onto return lines following the address encoded when the machine restarts.

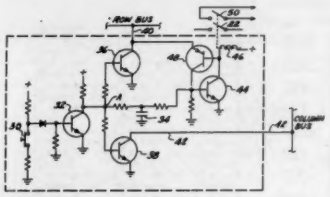
3,597,737

INTERLOCKING SWITCH ARRANGEMENT

Jacob L. Wallace, Jr., Springfield, and Robert M. Brown, Arlington County, both of, Va., assignors to The Susquehanna Corporation, Fairfax County, Va.

Filed June 21, 1968, Ser. No. 739,069
Int. Cl. H04q *1/00;* **H04m** *3/00*
U.S. Cl. 340—166 R **6 Claims**

An example of an interlocking switch arrangement is a matrix design having an interlocking circuit connected at each matrix cross point. Each interlocking circuit has a relay which when actuated closes the matrix at its associated cross point. Prior to actuation of its relay, this circuit grounds the matrix column and row buses at its cross point. This serves to open the matrix at any other cross point in the same row and column thereby preventing the matrix from being connected



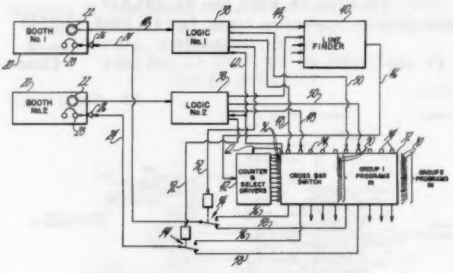
at more than one cross point in any column or row at the same time. The matrix design affords versatility in that it permits interlocking circuits to be easily added to or removed from the matrix without affecting or requiring any altering of the other interlocking circuits.

3,597,738

SWITCHING SYSTEM USING DIVIDED CROSSBAR SWITCH

David L. Joslow, Chester; John J. Bosnak, Old Saybrook, and James M. Skeffington, Chester, all of, Conn., assignors to Chester Electronic Laboratories, Inc., Chester, Conn.

Filed Mar. 10, 1969, Ser. No. 805,700
Int. Cl. H04q *9/00, 3/54*
U.S. Cl. 340—166 R **6 Claims**



In a switching system for connecting any one of a number of given lines to any selected one of a large number of available lines, a crossbar switch is used having its hold columns divided into two groups with each given line having assigned to it one hold column of each group. In the making of a selection, one hold column assigned to a given line selects a group of available lines, from the total of such lines, and connects the selected group to the other hold column assigned to the given line. The other hold column is then used to select an individual available line from the selected group. Preferably, the crossbar switch is so wired that both of the two hold columns assigned to a given line actually make both a group selection and an individual selection and a separate two-position auxiliary switch is used to select from the two individual available lines selected by the two hold columns.

3,597,739

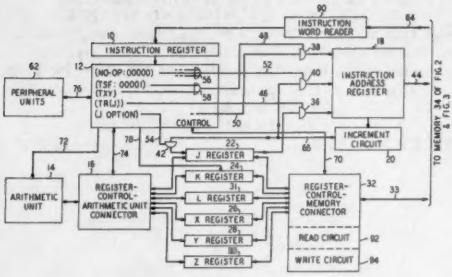
METHOD FOR OPERATING A DATA PROCESSOR

Maria C. Kolatis, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Filed Aug. 25, 1965, Ser. No. 482,461
Int. Cl. G06f *9/12*
U.S. Cl. 340—172.5 **9 Claims**

A stored program data processor having a memory unit for storing data words and instructions is disclosed. In the operation of the data processor it is from time to time necessary to

store groups of data words in various locations in the memory and periodically to process such stored data. However, not all the locations will always have had data stored therein at the beginning of the period allocated for processing such data. A method of operating the data processor is disclosed which involves storing a modifiable operation



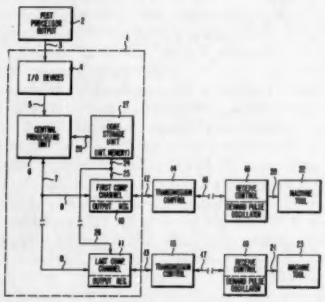
code and a transfer address in one word of each of the groups. This method permits the data in the group of locations to be processed only when the group in fact contains such data. When the group of locations has no data to be processed the transfer address is employed to indicate another group of locations which may have data to be processed.

3,597,740

INTERPOLATION AND INITIALIZATION TECHNIQUE FOR COMPUTER CONTROL OF MACHINE TOOLS

Royal H. Daw, Sherman Oaks, and Alexander Hurwitz, Los Angeles, both of, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1968, Ser. No. 697,848
Int. Cl. G06c *29/00*
U.S. Cl. 340—172.5 **8 Claims**



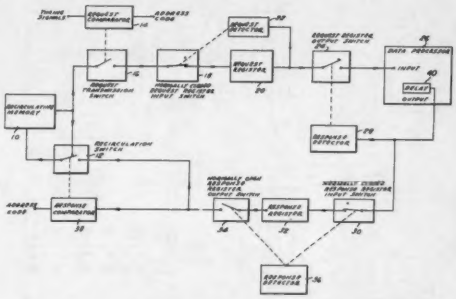
An interpolation technique in which numbers are calculated for each axis based on the velocity and distance to be moved and the numbers stored in output buffer tables in core storage for gating out by an oscillator external to the processing system. Each core storage output buffer table is initialized by a look-ahead technique in which the calculated numbers for each axis are examined and a determination made as to whether for a particular segment more ones than zeros are to be stored and the core storage portion for that segment initialized in accordance with this determination.

3,597,741

INFORMATION CONTROL IN A PROCESSING SYSTEM

Frank W. Sieracki, and Thomas Coombe, both of Berlin, N.J., assignors to Ultronic Systems Corporation

Filed Apr. 30, 1969, Ser. No. 820,592
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **7 Claims**



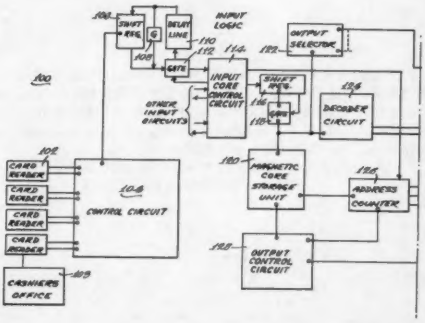
Information, such as stock market transactions, stored in a common memory, is to be displayed visually by a plurality of remotely disposed video monitors. The displays of the various monitors can be totally independent in content, but partial or complete duplication is possible. Each monitor has a keyboard associated therewith whereby the memory can be interrogated for certain specific information to be displayed by the corresponding monitor. To this end, interrogations or requests are supplied sequentially into the memory. The requests are then read out of the memory into a data processor which generates answers. The answers are fed back into the memory and then read out from the memory to the various monitors at which the requests originated.

3,597,742

DATA HANDLING SYSTEM

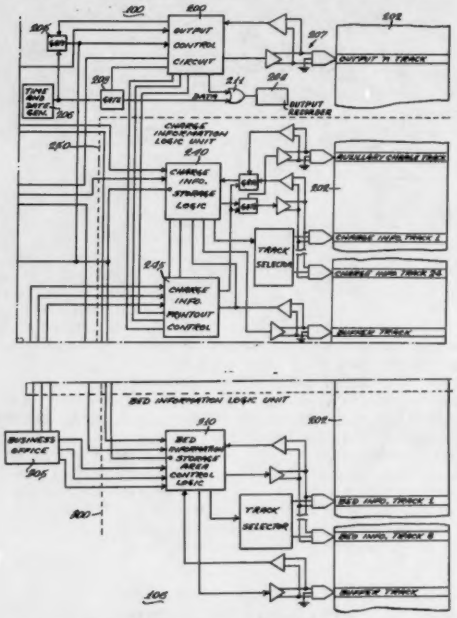
Louis E. Philipps, Addison, and Eugene A. Stanis, Wheeling, both of, Ill., assignors to Medelco Incorporated, Wood Dale, Ill.

Filed Sept. 20, 1968, Ser. No. 761,043
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **13 Claims**



The application discloses a hospital data handling system which transmits and receives all message information normally required in hospital operations and automatically withdraws from the transmitted messages all data necessary for establishing such items as bed status data, inventory records, patient charges, etc. The system input is derived from permanent punch cards containing all necessary message and control information and disposable punch cards containing variable data, such as patient identifying cards made, for instance, when a patient is admitted. A printer and

a card reader are located at each message originating location or station in the hospital to provide messages which are placed in a delay line input storage shared by a group of card readers. As the delay line data is transferred to a core storage unit shared by all the readers, a printer selector checks each message for printer addresses, and a control decoder checks for the type of operation to be performed on the message. If only output recording is required and if all addressed printers



are available, the message is cleared from the delay line storage and read out from the core storage unit to the printers through individual buffer tracks on a drum in a central processor. Alternatively, if all the printers are not available, the message is retained in the delay line until the printers are available. If the control decoding indicates that data operations are to be performed on the message, the message is sent from the core storage unit to the drum in the central processor.

3,597,743

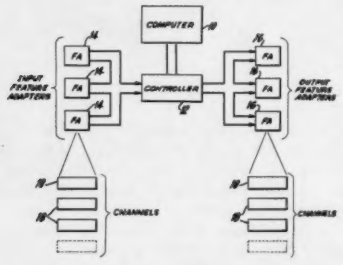
EXPANDER FOR REAL-TIME COMMUNICATION BETWEEN A COMPUTER AND EXTERNAL DEVICES

William J. Murphy, Suffern, and Alan S. Rosenthal, New York, both of, N.Y., assignors to Digital Applications, Inc., Houston, Tex., by said Rosenthal

Filed Mar. 26, 1969, Ser. No. 810,521

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **18 Claims**



A device is described for expanding the real-time access channel of a digital computer to enable the computer to communicate with a large number of external devices. A plurality of channels are arranged in groups, with each group forming a feature adapter. A plurality of feature adapters are shown connectable to the computer. A controller provides the necessary control functions to manipulate the data which may be sent to or demanded from the computer on an interrupt request basis or under direct program control.

3,597,744

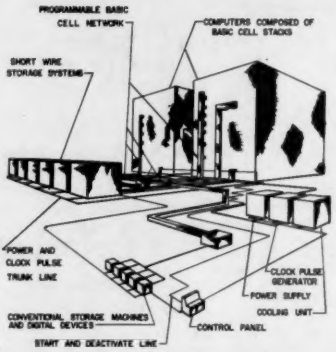
DIGITAL COMPUTING AND INFORMATION PROCESSING MACHINE AND SYSTEM

James H. Case, 2286 Preston St., Salt Lake City, Utah, and Neil C. Stewart, 1991 McClelland, Salt Lake City, Utah

Continuation of application Ser. No. 605,757, Dec. 29, 1966, now abandoned. This application Sept. 11, 1969, Ser. No. 871,729

Int. Cl. G11c *19/00*

U.S. Cl. 340—172.5 **23 Claims**



This invention provides a new parallel digital computing and information processing machine and system, which is word organized and can be appropriately described as of "short wire" type. The basic machine has an array of an arbitrarily large number of relatively simple information processing and transferring cells, which are arranged for independent operation in parallel at very high speeds. There is no overall command organization. When properly activated each cell processes or transfers information only within a region of influence containing the cell. Any such array has at least two and may have a multitude of such nonoverlapping regions of influence. The information transfer means between the cells are all "short" in that no such means connect between cells which are not in each other's influence regions. Long distance information transfer is achieved by programming means—duplicating information in a "bucket brigade" fashion from cell to cell. Each cell in the array contains at least one word of information, representing a four address instruction referring to cells in its influence region; and, when properly activated, each cell will decode its respective instruction word, obtain or send the addressed operand-information to neighboring cells; execute the instruction, store any results in the appropriate cells; and activate the next cell in the influence region.

3,597,745

METHOD FOR ARRANGEMENT AND INDEXING OF DIGITAL DATA IN STORAGE

Allan E. Lahrson, Oakland; Timothy L. Lenox, San Leandro; Robert J. Vannucci, Concord; Richard C. Zuchowski, San Francisco, and Frank E. Hublou, Richmond all of, Calif., assignors to Kaiser Aluminum & Chemical Corporation

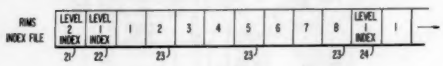
Filed Aug. 19, 1969, Ser. No. 851,371

Int. Cl. G06f *9/20*

U.S. Cl. 340—172.5 **4 Claims**

A method of arranging digital data so that it may be most efficiently located and read out. Two levels of indices are used to locate each data record, a ten word or eighty

character block of data. A single high level index tag refers to one of a plurality of secondary level index tags which, in turn, refer to the data record. The block containing the high level index tag also contains various file information.

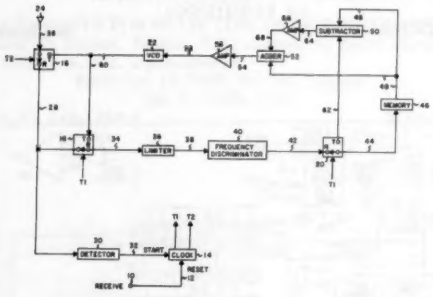


3,597,746

INFORMATION PROCESSING DEVICE

Francis Leighton Burnham, Silver Spring, Md., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.

Filed Nov. 29, 1968, Ser. No. 779,984
Int. Cl. G11c *27/00;* **H04b** *1/40, 7/14*
U.S. Cl. 340—173 RC **12 Claims**



An information processing device having a means for applying information to the device in a first form, such as frequency, and a means for converting the information into a second form, such as an analog voltage, in which form it is desired to store the information. Means are provided for storing the information in its second form. At a selected time after the information is stored, it is applied through a reconverting means, such as a VCO, to restore it to its original form for utilization. The output from the reconverting means is fed back through the same converting means as was used in the input operation. The feedback signal is utilized to control the input to the reconverting means. This feedback operation has the effect of compensating for any errors in the converting and reconverting operations.

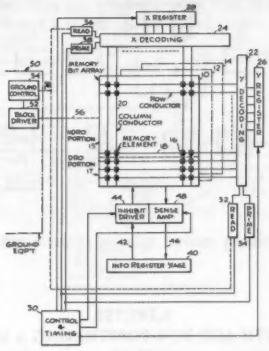
3,597,747

DIGITAL MEMORY SYSTEM WITH NDRO AND DRO PORTIONS

Ted Winkler, and Paul E. Wells, both of Los Angeles, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Feb. 10, 1966, Ser. No. 526,577
Int. Cl. G11c *5/02, 11/08*
U.S. Cl. 340—174 **19 Claims**

A single hard core memory system is disclosed having a first portion capable of reading and writing information and a second portion having a capability of reading out information only. The memory described in a single memory system having common read means and common sense means which are common to both the destructive readout portion and the nondestructive readout portion.

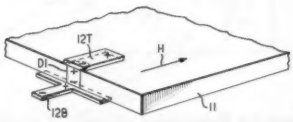


3,597,748

DOMAIN PROPAGATION ARRANGEMENT

Peter I. Bonyhard, Newark; Donald E. Kish, North Plainfield, and James L. Smith, Bedminster all of, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 16, 1969, Ser. No. 866,869
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 SR **5 Claims**



Single wall domains are moved in a slice of magnetic material by magnetically soft overlay patterns on both surfaces of the slice. The overlays are shaped alike and are offset one from the other along the axis of domain movement so that each provides pole patterns to attract a domain to the same consecutive positions as a magnetic field reorients in the plane of the slice.

3,597,749

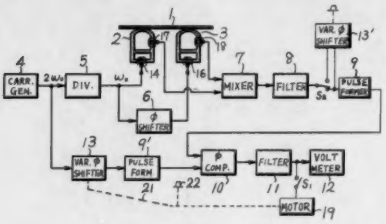
MAGNETIC HEADS UTILIZED AS A DISPLACEMENT MEASURING INSTRUMENT

Saburo Uemura, Kanagawa-ken, and Kiyoshi Himuro, Tokyo, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 17, 1969, Ser. No. 792,053
Claims priority, application Japan, Jan. 29, 1968, 43/5275
Int. Cl. G11b *5/46*
U.S. Cl. 340—174.1 H **10 Claims**

An apparatus for the magnetic recording of gradient information wherein magnetic indicia are recorded on a magnetic medium which is detected by a pair of magnetic pickup heads. Since the spacing between the magnetic indicia is fixed it is possible to accurately measure distance by counting the number of magnetic indicia which move past the heads. Since there are two heads, the direction of movement of the information may be detected also. In the present invention, the two heads are indexed by supplying a variable

phase shift mean in either of two channels and the indexing is accomplished by the phase shifters and the heads do not have to be mechanically moved relative to each other for proper indexing.

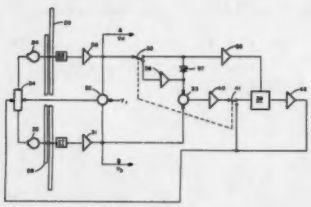


3,597,750

SERVO WITH AGC FOR POSITIONING A MAGNETIC HEAD

Russell K. Brunner, Morgan Hill; Timothy W. Martin, San Jose, and Charles R. Wilford, San Jose, all of, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

Filed Jan. 21, 1969, Ser. No. 792,343
Int. Cl. G11b *5/56, 21/10*
U.S. Cl. 340—174.1 C **6 Claims**



Apparatus for maintaining an array of read/write heads in position at a given track location on a stack of rotating discs, including: a photoelectric transducer for producing two alternating signals of 180° phase relationship, actuator control circuitry for servoing the array onto the signals and AGC circuitry for comparing the two signals and generating error signals to adjust the gains and amplitudes of the signals.

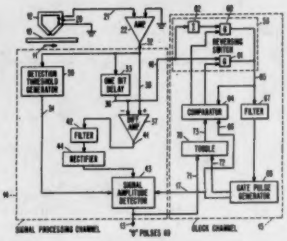
3,597,751

SIGNAL RECOVERY SYSTEM FOR USE WITH MAGNETIC MEDIA

Robert F. Heidecker, Longmont, and Friedrich R. Hertrich, Boulder, both of, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 21, 1969, Ser. No. 817,761
Int. Cl. G11b *5/04*
U.S. Cl. 340—174.1 **11 Claims**

The readback signal from a magnetic media is characterized by signal components of frequency F and frequency 2F, with shifts between such signal components. Normally, the F signal component has a greater amplitude than the 2F signal component. For recording binary data, a bit period of recording is equal to the wavelength of the 2F signal component. For data signal recovery, the readback signal is delayed by a period equal to one bit period. The delayed signal is then differenced with the readback signal in a linear manner such that the F signal components are added together in an absolute manner, while the 2F signal components are substantially cancelled. The amplified F signal components are then amplitude detected. Since there is a phase reversal of the 2F signal component each time the F signal component occurs, a reversing switch is utilized to maintain the phase of the clock the same irrespective of the phase of the 2F signal. In one embodiment, a pair of sample-and-hold circuits are used to provide signal delays.

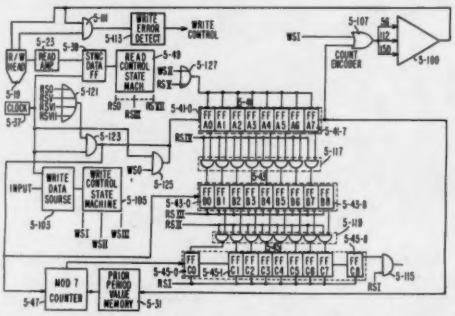


3,597,752

FM MAGNETIC RECORDING AND SENSING UTILIZING BIT PERIODS OF DIFFERENT LENGTHS

Cornelius Eldert, Bloomfield Hills, and Virgilio J. Quiogue, Northville, both of, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 17, 1969, Ser. No. 858,727
Int. Cl. G11b *5/04*
U.S. Cl. 340—174.1 H **34 Claims**



A method and apparatus for recording or sensing digital data on a magnetizable surface, for example, a magnetic stripe. The method utilizes bit periods of different lengths to represent binary coded "1's" and "0's" respectively. The presence of a binary "1" or an "0" on the magnetic surface is determined by a threshold value, i.e., in the digital mode a binary count which is computed as a function of the period of at least one preceding data bit for binary comparison with the period duration of the data bit being sensed.

3,597,753

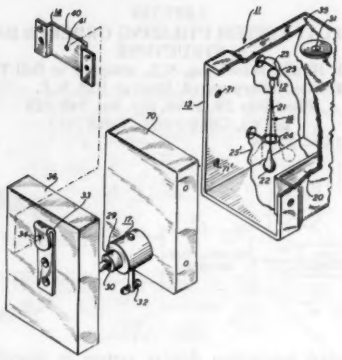
MOTION-TRIP SECURITY DEVICE

Leon Tabankin, Morris Plains, N.J., assignor to Visual Security Systems, Inc., Hanover, N.J.

Filed June 11, 1969, Ser. No. 832,075
Int. Cl. G08b *13/02*
U.S. Cl. 340—224 **4 Claims**

A motion-trip security device, for transmitting, receiving, and signalling upon occurrence of a breach of security of the object to which the device is affixed, said device being auto-

matically operative on slight unauthorized movement of the object or of the device, and having selective transmitting and



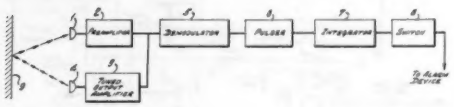
receiving features to indicate which of a series of such objects is being moved.

3,597,754

APPARATUS FOR DETECTING OBJECT MOVEMENT

Julius O. Lerner, Verona, N.J., assignor to David Herman, Livingston, N.J., a part interest

Filed Apr. 10, 1968, Ser. No. 720,050
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 R **28 Claims**



An apparatus for detecting a moving object in a monitored area includes an amplifier, preferably tuned to an ultrasonic frequency and having electromechanical transducers of either resonant or nonresonant type connected to its input and an output and mechanically coupled through the monitored area to form a feedback loop which causes the amplifier to oscillate at its tuned frequency. The amplifier signal level depends upon the state of the monitored area, and any movement therein varies the amplifier signal level as a cosine squared function pulse train. The amplifier output after demodulation is AC coupled to a pulse amplifier, shaper and limited, and then AC coupled to an RC integrating network to produce a DC signal whose level is proportional to the duration of the motionally caused pulse train, and is applied to control a solid state alarm switch. A plurality of pairs of transducers may be connected to each amplifier, and the demodulator and alarm network may be remote from the amplifier and transducers and coupled thereto by radio signals, the electric power line, acoustic coupling through transducers, or by direct wire connection. A plurality of amplifiers of different frequencies may be employed, and corresponding filters may be provided in the demodulating and control networks.

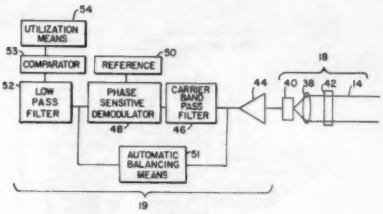
Also, a plurality of amplifiers, each modulating an oscillator, may be employed, and coupled to a common demodulator and control network.

3,597,755

ACTIVE ELECTRO-OPTICAL INTRUSION ALARM SYSTEM HAVING AUTOMATIC BALANCING MEANS

William J. Parkin, Wayland, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed May 28, 1968, Ser. No. 732,757
Int. Cl. G08b *13/18;* **G01t** *1/16*
U.S. Cl. 340—258 **8 Claims**



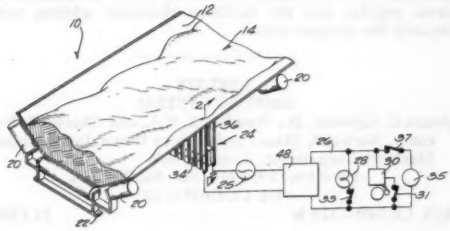
An active reflected energy optical intruder detection system wherein changes in reflected energy received by the system indicate the entry, exit or change of position of an object within the field-of-view. An automatic balancing means is included in the receiving portion of the apparatus whereby large background signals are balanced out such as to improve the sensitivity of the apparatus.

3,597,756

BELT FAULT DETECTION DEVICE

William G. Jackson, 1010 W. Washington St., Marquette, Mich.

Filed Mar. 21, 1969, Ser. No. 809,075
Int. Cl. B65h *25/30;* **H01h** *1/50*
U.S. Cl. 340—259 **10 Claims**



Pairs of conductor strips are positioned adjacent a moving conveyor belt for carrying materials. The flexible conductor strips of each pair are spaced to form a plurality of normally open switches in an electric circuit adapted to produce an electric signal. The strips are adjustably positioned for engagement by a protrusion in the conveyor belt whereby one of the flexible conductors of a pair is deflected into engagement with the other to close the electric circuit and produce the electric signal.

3,597,757

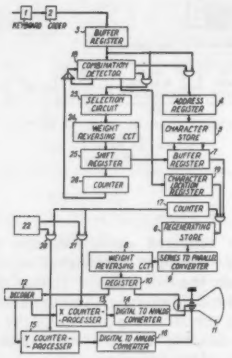
VISUALIZATION DEVICE WITH SETS OF VARIABLE CHARACTERS

Jacques J. Vincent-Carrefour, La Sapinere, Perros-Guirec; Jean-Claude Merlin, 1 rue Marcellin Berthelot, Vanves, and Philippe Pitard, 158 rue de la Convention, Paris, all of, France

Filed Jan. 20, 1970, Ser. No. 4,325
Claims priority, application France, Jan. 22, 1969, 6901071
6901071
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **4 Claims**

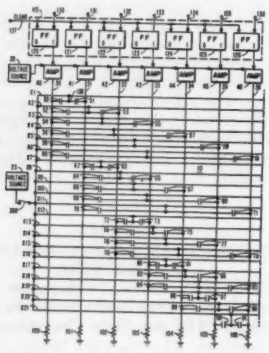
System for displaying characters or patterns on the screen of a cathode-ray tube, with each character or pattern formed

by a group of vectors and with each vector represented by a binary vector word of which one bit controls illumination and extinction of the spot tracing the vector on the screen and the other bits selectively define predetermined directions of incremental tracks of the spot. The system allows characters stored in a character store in the form of character words including a plurality of vector words to be selectively displayed. The character store is associated with a character address register and upon reception of a character address in said register, the character stored at that address in the



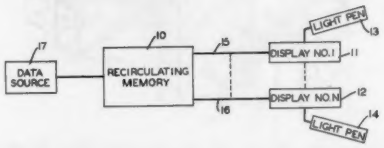
character store is displayed. The system permits also the change of the stored characters. For this, a character address word called in the following "fictitious address word" is sent from a remote station; it contains, as a part thereof a vector word contained in the character word of the character to be changed. A selection or chopper circuit chops off suitable bits of the fictitious address word to convert it into the vector word included therein. A function combination detector channels the true character address words towards the address register and the fictitious character address words towards the chopper circuit.

3,597,758
DISPLAY SYSTEM
James C. Greeson, Jr., Woodstock, N.J., and Charles E. Newcomb, Norwood, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 19, 1968, Ser. No. 785,172
Int. Cl. G09f *9/30*
U.S. Cl. 340—324 R **11 Claims**



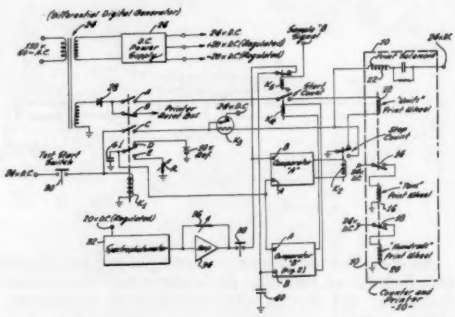
A plasma display panel has X and Y drive lines disposed on opposite sides of the panel, and plural signal sources are connected to the X and Y drive lines for the purpose of generating light characters on a dark background. The gas panel which may be relatively large consists of an illuminable gas sealed in a flat envelope. The gas at a selected coordinate intersection is ignited by a firing potential for maintaining illumination of ignited regions is supplied directly to the X and Y drive lines.

3,597,759
DISPLAY SYSTEM UTILIZING ORDERED DATA STRUCTURE
Arthur D. Hause, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 29, 1968, Ser. No. 748,458
Int. Cl. G06k *15/20;* **G06f** *7/22*
U.S. Cl. 340—324 A **8 Claims**



A limited interaction display system is described. The system features a display console equipped with a light pen and special logic circuitry which is controlled by ordered data signals stored in a memory. The system allows a user to interrogate displayed data and retrieve data interrelationships without the intervention of a computer.

3,597,760
DIFFERENTIAL DIGITAL CONVERTER
Harold L. Fox, Salt Lake City, Utah; Lamont J. Seitz, Tujunga, Calif., and Gale H. Thorne, Salt Lake City, Utah, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Oct. 31, 1968, Ser. No. 772,332
Int. Cl. G06g *7/18*
U.S. Cl. 340—347 AD **4 Claims**

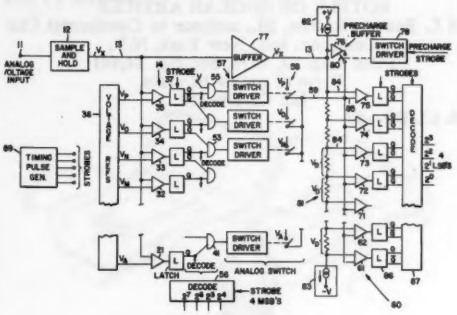


An electronic apparatus and system is described for use in conjunction with a spectrophotometer, and the like, and which is capable, for example, of directly reading the difference between two optical transmission readings of two successive test samples; or of converting the difference into a logarithmic scale, indicating the difference in optical densities of the two samples.

3,597,761
HIGH-SPEED ANALOG-TO-DIGITAL CONVERTER AND METHOD THEREFOR
Jerry J. Fraschilla, Sunnyvale; Robert D. Caveney, San Jose, and Ronnie M. Harrison, San Jose, all of, Calif., assignors to American Astronics, Inc., Palo Alto, Calif.
Filed Nov. 14, 1969, Ser. No. 876,787
Int. Cl. H03k *13/06*
U.S. Cl. 340—347 AD **9 Claims**

An analog-to-digital converter having first and second comparator banks where the analog input voltage is applied to both of the comparator banks simultaneously to allow the

second subranging comparator bank to slew and settle simultaneously with the switching operations of the first comparator bank. Discrete reference level voltages are selected by the first comparator bank in response to the analog input

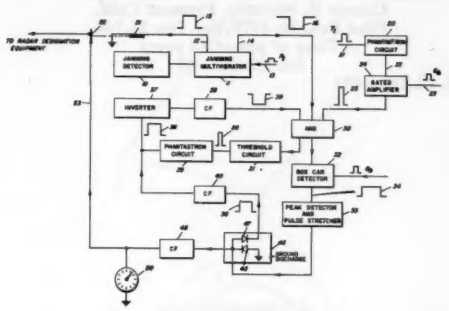


voltage and switched to the second comparator bank and serve to adjust the threshold detection level of the second bank. In an alternative embodiment two sample and hold circuits alternately apply samples taken at different times to the two comparator banks.

3,597,762
INSTANTANEOUS RANGE CIRCUIT

Paul L. DiMatteo, Plainedge, N.Y., assignor to The United States of America as represented by the Secretary of Navy

Filed Feb. 6, 1962, Ser. No. 171,533
Int. Cl. G01s 7/36
U.S. Cl. 343—18 E **4 Claims**

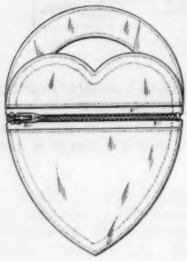


This invention relates to a counter-countermeasure for use in radar systems and more specifically to a circuit which is capable of giving an indication of the range of a target notwithstanding the fact that the target is jamming the radar equipment.

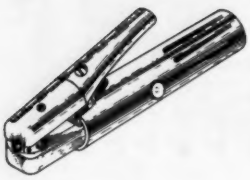
DESIGNS

AUGUST 3, 1971

221,327
PREFORMED POCKET FOR A GARMENT
Elizabeth L. Watts, Hayward, Calif., assignor to George R. Mirande, Fremont Calif.
Filed Feb. 26, 1970, Ser. No. 21,746
Term of patent 14 years
Int. Cl. D2—*08*
U.S. Cl. D2—400



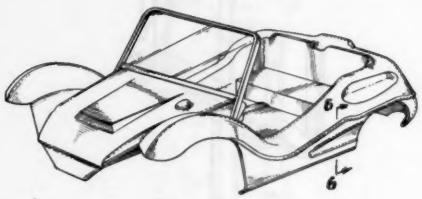
221,328
COMPRESSED AIR ELECTRIC ARC CUTTING AND GOUGING TORCH COMBINATION
Harold R. Henderson, Stephen A. Hoffman, and Myron D. Stepath, Lancaster, Ohio, assignors to Arcair Company, Lancaster, Ohio
Filed Sept. 16, 1969, Ser. No. 19,173
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—98



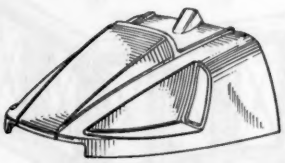
221,329
BOTTLE OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Aug. 12, 1970, Ser. No. 24,441
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—67

221,330
WALL PANEL
Lester V. Ottinger, Danbury, Conn., and Donald F. Luebs, Vienna, Va., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.
Filed June 17, 1970, Ser. No. 23,546
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1

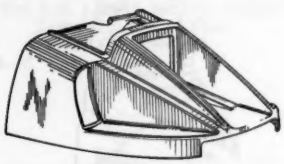
221,331
VEHICLE BODY
Joseph C. Vittone, Riverside, Calif., assignor to Engineered Motor Products, Inc., Riverside, Calif.
Filed Oct. 8, 1969, Ser. No. 19,472
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



221,332
SNOWMOBILE COWL
Anthony D. MacKeen and Yves Anselme Lapointe, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed Oct. 6, 1969, Ser. No. 19,424
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—24



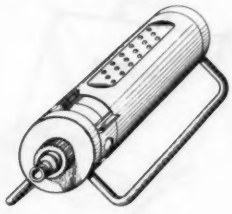
221,333
SNOWMOBILE COWL
Anthony D. MacKeen and Yves Anselme Lapointe, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed Oct. 6, 1969, Ser. No. 19,425
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—24



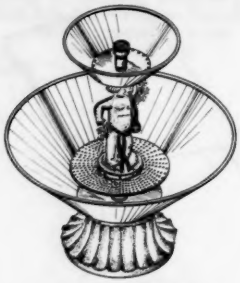
221,334
SNOWMOBILE WINDSHIELD
Yves Anselme Lapointe and Anthony Mackeen, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed Oct. 6, 1969, Ser. No. 19,429
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—24

221,335
SWORD
James Alfred Clayton, Acton, England, assignor to Wilkinson Sword Limited, London, England
Filed May 29, 1969, Ser. No. 17,424
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1

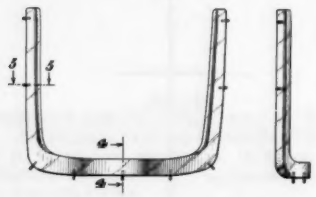
221,336
OSCILLATING SPRINKLER
Dieter Raffler, Olgastr. 87; and Franco Clivio, Olgastr. 64, both of Ulm, Germany; and Johan Katzer, Karlsbaderstr. 19, Neu-Ulm, Germany
Filed Sept. 8, 1969, Ser. No. 19,057
Claims priority, application Germany Mar. 13, 1969
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—8



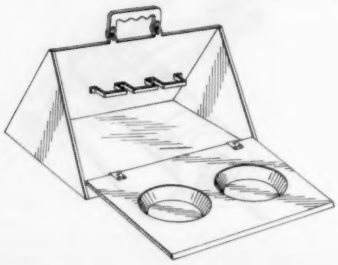
221,337
FOUNTAIN OR THE LIKE
Carl Price, 17218 Escalon Drive, Encino, Calif. 91316
Filed Oct. 15, 1969, Ser. No. 19,584
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—13



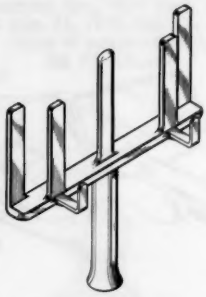
221,338
DENTAL DAM FRAME
Dennis G. Brave, 1600 Garrett Road, Upper Darby, Pa. 19082
Filed Apr. 1, 1970, Ser. No. 22,166
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



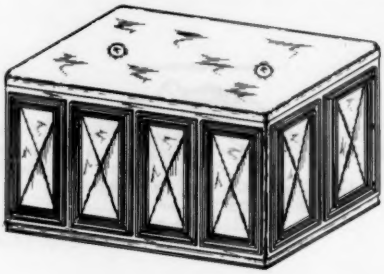
221,339
PET TRAVEL KIT
Charles H. Holycross, 240 Eldridge St., Long Beach, Calif. 90807
Filed Feb. 24, 1970, Ser. No. 21,583
Term of patent 3½ years
Int. Cl. D30—*01*
U.S. Cl. D30—1



221,340
BOOK SUPPORT FOR HOLDING A BOOK IN OPEN POSITION
Morton S. Pearl, 1940 Bay Drive, Miami Beach, Fla. 33141
Filed Mar. 4, 1970, Ser. No. 21,740
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—3



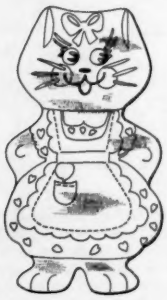
221,341
CHEST
Monte L. Levin, New York, N.Y., assignor to Pearl-Wick Corporation, Long Island City, N.Y.
Filed Feb. 18, 1970, Ser. No. 21,494
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—6



221,342
ANIMAL FIGURE DOLL
Anthony Chrones, 52 Wood Haven Blvd., North Providence, R.I. 02908
Filed May 25, 1970, Ser. No. 23,128
Term of patent 3½ years
Int. Cl. D21—*02*
U.S. Cl. D34—2

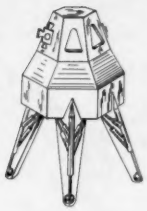
221,343
ANIMAL FIGURE DOLL
Anthony Chrones, 52 Wood Haven Blvd., North Providence, R.I. 02908
Filed May 25, 1970, Ser. No. 23,129
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—2

221,344
ANIMAL FIGURE DOLL
Anthony Chrones, 52 Wood Haven Blvd., North Providence, R.I. 02908
Filed May 25, 1970, Ser. No. 23,130
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—2



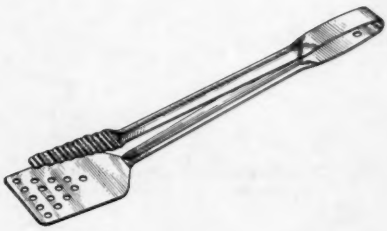
221,345
PUTTER GOLF CLUB GRIP
Victor L. Dworak, Huntington Beach, and John J. Baker, Laguna Hills, Calif., assignors to AMF Incorporated
Filed Apr. 1, 1969, Ser. No. 16,543
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5

221,346
LUNAR EXCURSION MODULE TOY
Robert B. Pennington, Jr., 17210 Parkland Drive, Shaker Heights, Ohio 44122
Filed Jan. 7, 1970, Ser. No. 20,804
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

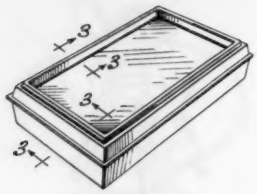


221,347
BASE OF A FLOOR MACHINE
Robert C. Albers, Lakewood, Ohio, and John W. Albers, Ballwin, Mo., assignors to Hadco Corporation, Cleveland, Ohio
Filed Oct. 21, 1969, Ser. No. 19,652
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D37—1

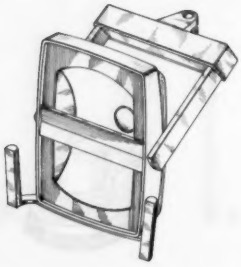
221,348
FOOD HANDLING TONGS OR THE LIKE
Beekman W. Myer, Wood Dale, and Leslie W. Seibert, Jr., Northbrook, Ill., assignors to Chicago Display Company, Melrose Park, Ill.
Filed Apr. 9, 1970, Ser. No. 22,348
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D44—4



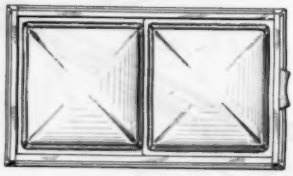
221,349
SERVING TRAY
John A. Bridges, Nashville, and Margaret E. Wilson, Chapel Hill, Tenn., assignors to Aladdin Industries, Incorporated, Chicago, Ill.
Filed Dec. 17, 1969, Ser. No. 20,536
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10



221,350
DENTAL LIGHT OR SIMILAR ARTICLE
Alexander Schwan, 3131 Westchester Road, Toledo, Ohio 43615
Filed Jan. 26, 1970, Ser. No. 21,071
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—20

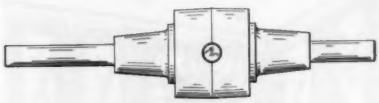


221,351
LIGHTING FIXTURE FOR RECREATIONAL VEHICLES, BOATS OR THE LIKE
Bruce G. Remington, Vicksburg, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.
Filed Dec. 29, 1969, Ser. No. 20,670
Term of patent 14 years
Int. Cl. D12—*99;* D26—*02*
U.S. Cl. D48—32

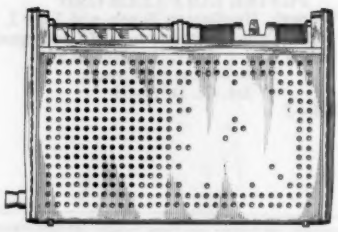


221,352
STABILIZER FOR AN ELECTRIC PRESSING IRON HANDLE
John E. Reed, Glen Ellyn, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Apr. 10, 1970, Ser. No. 22,363
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—6

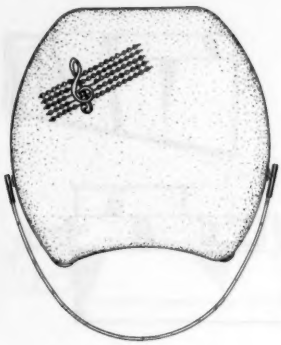
221,353
DIFFERENTIAL
Hans Hauser, Fredericktown, Ohio, assignor to The J. B. Foote Foundry Co., Fredericktown, Ohio
Filed Mar. 5, 1970, Ser. No. 21,758
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



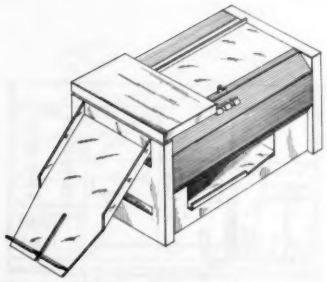
221,354
PORTABLE RADIO
Richard Cubertson, Manlius, N.Y., assignor to General Electric Company
Filed June 25, 1970, Ser. No. 23,676
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



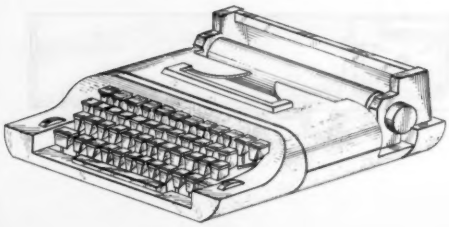
221,355
PORTABLE AUTOMATIC RECORD PLAYER OR SIMILAR ARTICLE
Antonio Melandri, Viale Lunigiana 42, Milan, Italy
Filed Nov. 3, 1969, Ser. No. 19,905
Claims priority, application Italy May 2, 1969
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4



221,356
ELECTROSTATIC COPIER
Richard H. Penney, New York, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Feb. 19, 1970, Ser. No. 21,513
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1

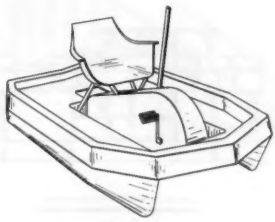


221,357
TYPEWRITER
Richard H. Penney, New York, N.Y. assignor to Sperry Rand Corporation, New York, N.Y.
Filed Aug. 11, 1969, Ser. No. 18,618
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11

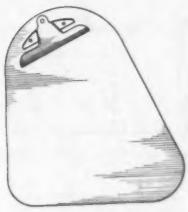


221,358
TYPEWRITER
Donald M. Genaro, Haworth, N.J., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Sept. 3, 1969, Ser. No. 18,991
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11

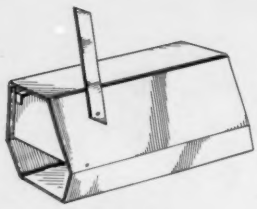
221,359
PONTOON VESSEL
Leedice S. Smith, Spokane, Wash. (Elk, Wash. 99009)
Filed Apr. 13, 1970, Ser. No. 22,412
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D71—1



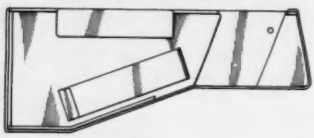
221,360
CLIP BOARD
Warren V. Prince, 307 N. East St., Anaheim, Calif. 92805
Filed Dec. 22, 1969, Ser. No. 20,596
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D74—2

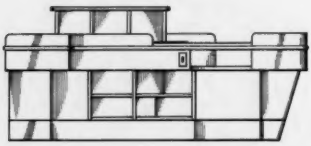


221,361
MAILBOX OR SIMILAR ARTICLE
Walter L. Parker, R.F.D. 14, Box 318R, Richmond, Va. 23231
Filed Nov. 20, 1969, Ser. No. 20,202
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D74—9

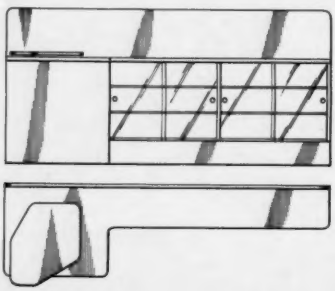


221,362
CHECK STAND OR SIMILAR ARTICLE
Oscar Ray Henderson, Covina, Calif. (12774 Islandview Ave., Uniontown, Ohio 44685)
Filed Feb. 12, 1970, Ser. No. 21,416
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—2

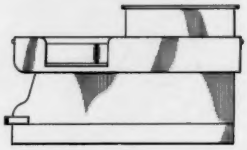




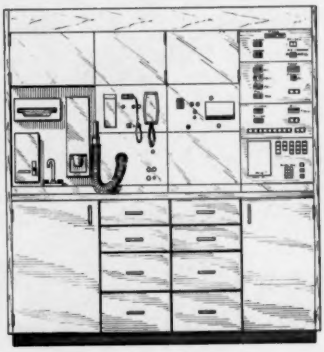
221,363
COMBINED REGISTER STAND AND DISPLAY CABINET
Oscar Ray Henderson, Covina, Calif. (12774 Islandview Ave., Uniontown, Ohio 44685)
Filed Feb. 12, 1970, Ser. No. 21,417
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—2

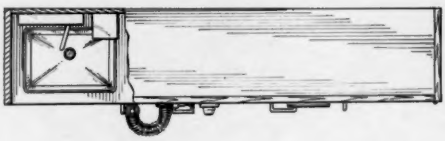


221,364
CHECK STAND OR SIMILAR ARTICLE
Oscar Ray Henderson, 652 W. Arrow Highway, Covina, Calif. 91722
Filed Mar. 11, 1970, Ser. No. 21,849
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—2

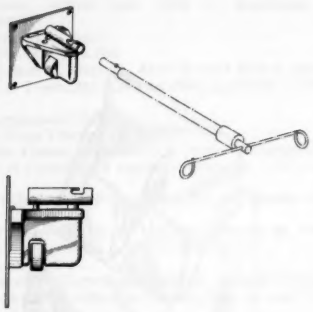


221,365
MEDICAL DIAGNOSTIC CONSOLE
Walter M. Miller, Arlington Heights, and Ronald W. Jodat, Park Ridge, Ill., assignors to Medequip Corporation
Filed Jan. 26, 1970, Ser. No. 21,096
Term of patent 14 years
Int. Cl. D24—*02*; D6—*01*
U.S. Cl. D83—1

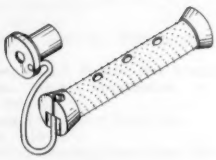




221,366
INTRAVENOUS ROD HOLDER
Joseph P. Saternus, Midlothian, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 24, 1970, Ser. No. 22,195
Term of patent 14 years
Int. Cl. D24—*02*; D8—*03*
U.S. Cl. D83—1

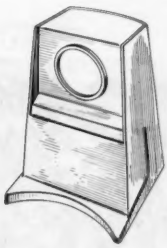


221,367
HAIR WAVING RODS
Weldon K. Weldon, 130 Broad St., Jacksonville, Fla. 32202
Filed Oct. 21, 1969, Ser. No. 19,654
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D86—10

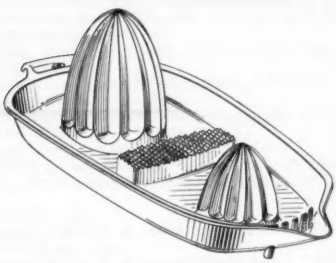


221,368
COMBINED UMBRELLA AND SHEATH
Manfred Bremshey, Mount Royal, Quebec, Canada, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Continuation-in-part of design application Ser. No. 14,435, Nov. 13, 1968. This application Feb. 19, 1970, Ser. No. 21,512
Claims priority, application Canada June 5, 1968
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D87—1

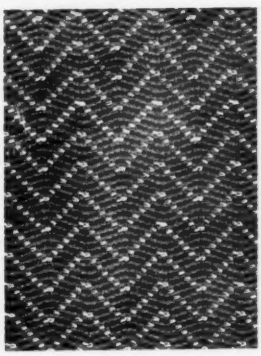
221,369
POWER UNIT FOR KITCHEN APPLIANCES
Monte L. Levin, New York, N.Y., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Mar. 2, 1970, Ser. No. 21,705
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D89—1



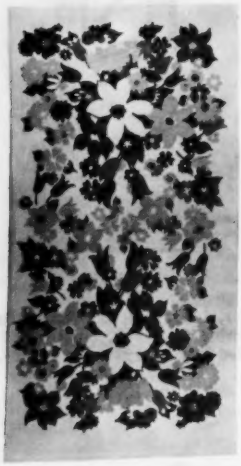
221,370
JUICER
Lothar Hutzler, Long Beach, N.Y., assignor to Hutzler Manufacturing Company, Long Island City, N.Y.
Filed July 28, 1970, Ser. No. 24,181
Term of patent 7 years
Int. Cl. D7—*05*
U.S. Cl. D89—1



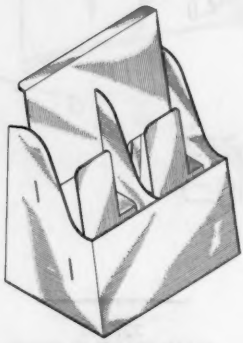
221,371
TEXTILE FABRIC
George Hilliard Hughes, Asheville, N.C., assignor to Beacon Manufacturing Company, Swannanoa, N.C.
Filed Nov. 28, 1969, Ser. No. 20,300
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D92—1



221,372
TOWEL OR SIMILAR ARTICLE
Leonard C. Clementi, Huntington, N.Y., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed June 9, 1970, Ser. No. 23,398
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D92—26



221,373
BROCHURE STAND
Paul N. Gallat, 4333 East 10 Lane, Hialeah, Fla. 33013
Filed Mar. 9, 1970, Ser. No. 21,797
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—3



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TO WHOM

PATENTS WERE ISSUED ON THE 3D DAY OF AUGUST, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Abbey, Harold G. Solid-state regulation of power supplies. 3,597,674, Cl. 321-5.

Abbey, Janet Ballard, 15% to Lacheen, Jerome H. Educational teaching and testing device. 3,596,377, Cl. 35-22.

Abbott Laboratories: *See—*
Forry, Donald R.; Cummings, Charles A.; Russell, Robert; Peralta, Ben C.; Schaffer, Albert M.; Denny, Dale A.; and Welch, William H., 3,596,501.
Winn, Martin, 3,597,422.

Abel, Edward P.; and Minsk, Louis M., to Eastman Kodak Company. Photographic silver halide and a poly(vinyl alcohol) binding agent. 3,597,215, Cl. 96-114.

Abelow, Joseph: *See—*
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Abendroth, Karl W., to General Signal Corporation. Warning light housing. 3,597,606, Cl. 240-41.3

Abildgaard Laboratories, Inc.: *See—*
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Acheson, John L.: *See—*
Clark, Richard J.; Acheson, John L.; and Landherr, Lawrence R.,3,596,677.

Ackermann, Jacob; Radici, Pierino; and Anessi, Giorgio, to Societa Italiana Resine S.p.A. Stabilization of polyoxymethylenes. 3,597,396, Cl. 260-67.

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Adam, Gunter, to Hannes Marker. Toe iron for safety ski bindings. 3,596,919, Cl. 280-11.35

Adamovske strojirny narodni podnik: *See—*
Jurny, Josef, 3,596,903.

Adams, Derek Stanley; and Thompson, Michael Ainley, to Lucas, Joseph, (Industries) Limited. Motor speed system with switching frequency control. 3,597,671, Cl. 318-332.

Adams, Donald L. Plug valve manifold. 3,596,680, Cl. 137-637.

Adams, John Q. Air current deflecting device. 3,596,974, Cl. 296-1.

Adams, Norman S.: *See—*
Ortner, Robert C.; and Adams, Norman S.,3,596,609.

Adams, Robert P., to Cenco Medical/Health Supply Corporation, mesne. Perastaltic pump. 3,597,124, Cl. 417-477.

Adickes, Cecil F., to Tonka Corporation. Combination helmet and hanger means for carrying toy vehicles. 3,596,289, Cl. 2-3.

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Allander, Claes Vilhelm, to AB Braas Spegelindustri. Attachments for rearview mirrors. 3,596,867, Cl. 248-475.

Allard, Pierre Jean Marie Theodore. Boring unit, in particular for small and middle depths. 3,596,722, Cl. 175-93.

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Antonio, Christo: *See*—
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Gush, Donald P.; Uy, Manuel C.; and Caicedo, Einstein E., to Grace, W. R., & Co. Apparatus for preparing a printing plate from a photosensitive composition. 3,597,080, Cl. 355-85.

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Guy, Billy Lynn, to Unibraze Corporation, mesne. Lubricating means for pressure indicator. 3,596,521, Cl. 73-419.

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Haarer, Erich; Corr, Hubert; and Win 'erl, Siegfried, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 1,2-diamines. 3,597,483, Cl. 260-563.

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Hablitzel, Hermann; Gallasch, Ernst; Jacob, Friedrich; and Patzold, Alfred, to Messrs. Volkswagenwerk Aktiengesellschaft. Plastic automobile body. 3,596,979, Cl. 296-31.

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Hagan, John M., to Aluminum Company of America. Vacuum stripping. 3,596,494, Cl. 72-344.

Haines, Allan D., to National Machinery Company, The. Pointer. 3,596,301, Cl. 10-9.

Haire, Alan M. Adjustable safety ski bindings. 3,596,920, Cl. 280-11.35

Halbert, William G., Jr., to Tenneco Oil Company. Method of recovering hydrocarbons with highly aqueous soluble oils using phosphate ester surfactants. 3,596,715, Cl. 166-274.

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Hubbard, David W.; and Rastorguyeff, Andrew W., to Pitney-Bowes, Inc. Label-making system. 3,597,076, Cl. 355-29.

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Hughes, Donald H., to Proctor & Gamble Company, The. Kojkl acrylate containing liquid shortening for use in cake preparation and cake mix containing the same. 3,597,226, Cl. 99-94.
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